City and County of San Francisco
Planning Department

PORT OF SAN FRANCISCO WATERFRONT LAND USE PLAN

Draft Environmental Impact Report

94.155E
State Clearinghouse No. 94123007

Draft EIR Publication Date: May 24, 1996
Draft EIR Public Hearing Date: July 11, 1996
Draft EIR Public Comment Period: May 24, 1996 to July 11, 1996

Written comments should be sent to
The Environmental Review Officer
San Francisco Planning Department
1660 Mission Street, Fifth Floor
San Francisco, CA 94103

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DATE: May 24, 1996

TO: Distribution List for the Waterfront Land Use Plan Draft EIR

FROM: Barbara W. Sahm, Environmental Review Officer

SUBJECT: Request for the Final Environmental Impact Report for the Waterfront Land Use Plan

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This is the Draft of the Environmental Impact Report (EIR) for the Waterfront Land Use Plan. A public hearing will be held on the adequacy and accuracy of this document. After the public hearing, our office will prepare and publish a document titled "Summary of Comments and Responses" which will contain a summary of all relevant comments on this Draft EIR and our responses to those comments; it may also specify changes to this Draft EIR. Public agencies and members of the public who testify at the hearing on the Draft EIR will automatically receive a copy of the Comments and Responses document, along with notice of the date reserved for certification; others may receive such copies and notice on request or by visiting our office. This Draft EIR together with the Summary of Comments and Responses document will be considered by the City Planning Commission in an advertised public meeting and certified as a Final EIR if deemed adequate.

After certification, we will modify the Draft EIR as specified by the Comments and Responses document and print both documents in a single publication called the Final Environmental Impact Report. The Final EIR will add no new information to the combination of the two documents except to reproduce the certification resolution. It will simply provide the information in one rather than two documents. Therefore, if you receive a copy of the Comments and Responses document in addition to this copy of the Draft EIR, you will technically have a copy of the Final EIR.

We are aware that many people who receive the Draft EIR and Summary of Comments and Responses have no interest in receiving virtually the same information after the EIR has been certified. To avoid expending money and paper needlessly, we would like to send copies of the Final EIR to private individuals only if they request them. If you would like a copy of the Final EIR, therefore, please fill out and mail the postcard provided on the following page to the Office of Environmental Review within two weeks after certification of the EIR. Any private party not requesting a Final EIR by that time will not be mailed a copy.

Thank you for your interest in this project.

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PLANNING DEPARTMENT

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May 24, 1996

To Whom It May Concern:

Accompanying this letter is a copy of the Draft Environmental Impact Report (EIR) concerning the Port of San Francisco's proposed Waterfront Land Use Plan, Case File No. 94.155E.

The Waterfront Land Use Plan proposes land use policy and designates acceptable and unacceptable uses for all property under jurisdiction of the Port of San Francisco, extending generally from the Hyde Street Pier to India Basin, about 7.5 miles and including about 630 net acres. The Draft EIR has been prepared by the San Francisco Planning Department; it analyzes potential environmental impacts of various development and activities that could occur under policies of the proposed Plan. Implementation of the Plan would require changes to the City Master (General) Plan, City Planning Code, and Zoning Map; and changes to Bay Conservation and Development Commission regulations.

Public comments on the Draft EIR will be accepted from May 24 to July 11, 1996. Comments should be sent to Barbara Sahm, Environmental Review Officer at the letterhead address.

A public hearing on this Draft EIR and other matters will be held by the Planning Commission on Thursday, July 11, in Room 428, temporary City Hall (War Memorial Veterans' Building) 401 Van Ness Avenue, San Francisco, beginning at 1:30 p.m. or later (call 558-6422 the week of the hearing for a recorded message giving a more specific time). Any interested party may appear at the hearing and give testimony regarding the accuracy and completeness of the Draft EIR.

All written comments and all comments received at the public hearing will be responded to in a Comments and Responses document, which will also contain any changes to the text of the Draft EIR. The Draft EIR, together with the Comments and Responses document, comprises the Final EIR, which the San Francisco Planning Commission must certify as accurate and complete before the San Francisco Port Commission can take action on the proposed Plan and before the Planning Commission and Board of Supervisors can take action on proposed implementing and conforming amendments to the Master (General) Plan, City Planning Code, and Zoning Map. Preparation of an EIR does not indicate a decision by the City either to carry out or approve, or disapprove, the Plan. Following the decision on the project, a Notice of Determination will be filed with the County Clerk if the project has been approved. After such filing, there is a period of 30 days during which an appeal contesting the EIR may be taken to court, as provided in the California Environmental Quality Act.

Additional copies of the Draft EIR are available at the San Francisco Planning Department, 1660 Mission Street, first floor Planning Information Counter, open weekdays from 8 a.m. to 5 p.m. Copies are available for review at the San Francisco Main Library (Civic Center) and all branch libraries.

For further information concerning environmental review of the Waterfront Land Use Plan, contact Paul Deutsch of the Office of Environmental Review at 558-6383. For further information concerning the Waterfront Land Use Plan and process, contact the Port of San Francisco at 274-0354.

Office of Environmental Review

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San Francisco Planning Department
Office of Environmental Review
1660 Mission Street, 5th Floor
San Francisco, CA 94103

Attn: Paul Deutsch, EIR Coordinator
94.155E - Waterfront Land Use Plan

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RETURN REQUEST REQUIRED FOR FINAL
ENVIRONMENTAL IMPACT REPORT

REQUEST FOR FINAL ENVIRONMENTAL IMPACT REPORT

TO: San Francisco Planning Department,
Office of Environmental Review

Please send me a copy of the Final EIR.

Signed: ____

Print Your Name and Address Below

____

City and County of San Francisco
Planning Department

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Port of San Francisco
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WATERFRONT LAND USE PLAN
DRAFT ENVIRONMENTAL IMPACT REPORT (DEIR)

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I. SUMMARY

This document is the Environmental Impact Report (EIR) for the Waterfront Land Use Plan (WLUP), proposed by the Port of San Francisco (Port) for essentially the entire area under its jurisdiction, covering about 730 acres, which extends for approximately 7.5 miles, generally from the Hyde Street Pier to India Basin. This EIR also covers amendments to the San Francisco General (Master) Plan, Planning Code, and Zoning Map, and various amendments to Bay Conservation and Development Commission (BCDC) plans, regulations, and policies that may be necessary to fully implement the WLUP. This EIR provides information at a general level of detail about potential environmental impacts that could occur through adoption and implementation of the WLUP, and describes mitigation measures that could reduce or eliminate the impacts. While the EIR analysis is based on assumed development and activity that could occur pursuant to the WLUP, individual projects that may be proposed in the future under the WLUP would undergo environmental review to determine whether they could generate further impacts specific to their site, time, and project description.

In addition to the Port Commission, the San Francisco Planning Commission and Board of Supervisors have regulatory authority over Port lands through the San Francisco General Plan and City Planning Code. The California State Lands Commission has responsibility to review and approve certain Port Commission actions affecting lands granted in trust to the Port of San Francisco (most of the land in Port jurisdiction), pursuant to State legislation. The Attorney General of California exercises its authority to ensure compliance with the terms of the trust grant. Under the McAteer-Petris Act of 1965, BCDC regulates all development in San Francisco Bay and within 100 feet of the shoreline, including development on piers, through policies contained in the *San Francisco Bay Plan,* the *San Francisco Special Area Plan* and the *San Francisco Pier 7-24 Total Design Plan,* along with the *San Francisco Bay Area Seaport Plan* (with the Metropolitan Transportation Commission; comprehensive amendments to the *Seaport Plan* were adopted by BCDC in April 1996).

PROJECT DESCRIPTION

The Draft WLUP includes a Prologue, an Executive Summary, five chapters outlining Plan goals, objectives and policies, and four appendices. Please refer to the Draft WLUP dated January 24, 1995, or the republished version released in April 1996 for a detailed review of the

Port's proposed policies. A copy of the Draft Plan can be obtained from the Port of San Francisco offices at the Ferry Building, The Embarcadero at Market Street. The Plan is also available for review at the San Francisco Main Public Library in the Civic Center. Information about the Plan can be obtained by calling 274-0354.

The WLUP specifies acceptable and unacceptable land uses for all properties under Port jurisdiction. The Plan is intended to guide future development of Port properties and to satisfy requirements of Proposition H, passed by the voters in November 1990.

Chapter 1 of the Draft Plan is an Introduction to the Port.

Chapter 2 outlines the goals of the Plan. The Plan's overarching goal is "reuniting the City with its waterfront" through implementation of the Plan.

Chapter 3 sets forth the Plan's General Land Use Policies. This chapter generally describes the acceptable uses contained in the Plan and general policies that apply to all sites on which those uses would be permitted on a long-term and interim basis (other policies affecting only specific sites are provided in Chapter 4, summarized below). Chapter 3 also explicitly identifies non-maritime land uses that would be unacceptable within 100 feet of the shoreline, pursuant to criteria identified in Proposition H. The Plan provides for seven categories of acceptable land uses: Maritime Uses, Transitional Maritime Sites, Open Space and Public Access, Residential Uses, Commercial Uses, Other Uses, and Interim Uses.

Chapter 4 describes Plan objectives for the five geographical subareas of the WLUP Project Area (see below for a description of the subareas) and "Standards for New Development" for specific sites within each subarea.

Chapter 5 discusses implementation of the WLUP. The chapter provides an overview of legislative and regulatory issues associated with the land uses proposed in the Plan, implementation objectives and an outline for a streamlined entitlement process, and financial implications of the Plan.

The WLUP divides the Project Area into five subareas, each of which includes both piers and seawall lots. Figure 1, p. 13, shows the Project Area and subareas. The subareas and their boundaries are:

Fisherman's Wharf - Just west of Hyde Street Pier to Pier 35½ (inclusive) (see Figure 2, p. 24)

Northeast Waterfront - Pier 35 to Pier 7 (see Figure 3, p. 26)

Ferry Building - Pier 5 to Embarcadero Promenade south of the Ferry Building (see Figure 4, p. 28)

South Beach/China Basin - Pier 22½ to Mariposa Street (Pier 66) (see Figures 5a and 5b, pp. 30-31)

Southern Waterfront - Piers 68-70 to India Basin (see Figures 6a and 6b, pp. 34-35)

The Port will propose conforming amendments to the following planning and policy documents in order to implement the Draft WLUP and ensure consistency among planning documents.

(1) General (Master) Plan of the City and County of San Francisco

(2) San Francisco City Planning Code and Zoning Map

(3) San Francisco Bay Conservation and Development Commission's *Bay Plan, Special Area Plan, Total Design Plan, Seaport Plan* and other planning documents.

In addition, changes to regulations or policies administered by BCDC will also be requested, including those related to replacement fill, interim land use, and allowable land use issues.

AREAS OF CONTROVERSY

The major areas of controversy known at this time involve the extent to which the waterfront should be reserved exclusively for maritime uses, and certain specific uses currently proposed that could be accommodated under the WLUP. As expressed through passage of Proposition H, the voters of San Francisco desire that the waterfront be reserved to the maximum feasible extent for maritime uses. Under Proposition H, non-maritime uses are to be allowed only if maritime uses are found infeasible. The first stage of the WLUP process involved consideration of how much Port property would be needed in the future for maritime uses. It was determined by the Waterfront Plan Advisory Board, a 27-member panel representing the public and specific waterfront stakeholders, after considerable research and public testimony that about two-thirds of Port area would be reserved exclusively for maritime uses to provide sufficient area for future expansion of maritime uses. The other one-third could be used for either maritime or non-maritime uses. To the extent that people may disagree, the extent to which non-maritime uses should or should not be allowed would be an area of controversy. The controversy is not directly related to environmental issues, as both maritime and non-maritime uses can be environmentally benign or adverse. This EIR examines potential impacts of a wide range of potential uses that could occur on the waterfront, both maritime and non-maritime.

A cogeneration power plant facility has been proposed for a portion of Seawall Lot 344. A power plant use is deemed an acceptable use for this site by the WLUP provided certain development standards are met, including state-of-the-art environmental protection and facility design, maximum public benefits, and no precluding of nearby maritime activities. Cogeneration plant siting approval is under the jurisdiction of the California Energy Commission pursuant to Chapter 6 of the Warren-Alquist Act, commencing with Public Resources Code Section 25500. Environmental review of the proposal has been carried out, with information contained in the functional equivalent of an environmental impact report pursuant to CEQA Section 21080.5 and CEQA Guidelines Section 15251(k). The project is controversial in the Bayview/Hunters Point community, with some residents supporting the project and others extremely concerned about its potential environmental and health impacts. Should the Port Commission consider leasing the site for the project, it would rely on the California Energy Commission's environmental assessment, the Final Staff Assessment, which included land use, socio-economic, visual resources, transportation, odor, environmental justice, air quality, public health, biology, cultural resources, hazardous materials, hazardous wastes, soil and water resources, and community benefits assessments. This EIR assumes development of the proposed cogeneration power facility as part of Alternative A.

A 42,000-seat ballpark and accessory restaurant, retail and office uses near Third and King Streets (Pier 46B, Seawall Lot 336, and property owned by Caltrans) has been proposed by the San Francisco Giants. The ballpark would be 130 feet in height, which would be within the amended 150-foot height limit for the immediate area approved by San Francisco voters in March 1996. One or more aspects of a ballpark at the site would have to be approved by the Board of Supervisors, San Francisco Planning Commission, the Port Commission, the Bay Conservation and Development Commission, and possibly the State Lands Commission. Changes to the San Francisco General (Master) Plan would be required. Prior to any of these approvals, a separate, detailed environmental review would have to be completed. Although endorsed by about a two-to-one margin by the voters of San Francisco in the March 1996 election, there is opposition to the ballpark based on environmental issues of traffic congestion, parking shortages, height and bulk, noise, and light and glare; on non-environmental policy issues such as the appropriateness of a non-maritime use in a waterfront location; and on non-environmental economic issues such as whether construction and operation of a ballpark will be financially self-supporting without requiring public subsidy. This EIR includes a limited analysis of the proposed ballpark as a variant to Alternative B (see Chapter VII, Variants to the Alternatives) to accommodate inclusion of the ballpark in the WLUP. As noted, the ballpark will be the subject of its own substantially more detailed environmental impact report.

Other areas of controversy may arise as public hearings are held on the WLUP and detailed conforming amendments proposed by the Port to the San Francisco General Plan and Planning Code, and BCDC plans, policies or regulations.

APPROACH TO EIR ALTERNATIVES

Because the "project" analyzed in this EIR is a plan, and not a single development proposal, and because the Draft WLUP contains an array of potential land uses for each subarea, the challenge for the EIR is to adequately cover the very large and unpredictable number of potential "future waterfront" outcomes that could occur. To address this issue, the EIR analyzes three Alternatives and four variants on the Alternatives. The Alternatives include a No Project Alternative and two development scenarios (Alternative A and Alternative B). The Alternatives are assessed at an equal level of detail. The four variants to the Alternatives are assessed at a lesser level of detail.

The three EIR Alternatives generally represent a progression from low to high levels of new development and activity. The **No Project Alternative** generally represents the lowest level of development, undertaken in a piecemeal fashion without a comprehensive approach. **Alternative A** generally represents a moderate-development scenario, with an emphasis on smaller-scale development and local-serving uses, and interim uses such as light industrial, warehousing, and general industrial. The focus would be on adaptive reuse of existing facilities. A moderate amount of regulatory change was assumed to develop Alternative A. **Alternative B** represents the most intensive level of development and activity that could reasonably be expected to occur by year 2010. Of all the Alternatives, it generally encompasses the greatest level of new maritime and non-maritime development and improvements to Port facilities, emphasizing visitor-serving uses and waterfront attractions in combination with high levels of industrial and non-industrial maritime activity. Alternative B is characterized by larger-scale development involving more new construction than the other Alternatives. Alternative B assumes the greatest amount of regulatory change, which would allow full implementation of the uses identified as acceptable under the WLUP. Under all three Alternatives, many of the existing waterfront uses would remain.

The EIR analysis assumes various levels of land use development in various waterfront locations for the three Alternatives as the basis for predicting potential impacts. Land use development that could occur by the year 2010 is quantified by subarea, but specific uses are generally not identified for specific locations.

Four variants on the EIR Alternatives are also analyzed: (1) potential development of a ballpark in the Project Area near the foot of Berry Street, as a variant to Alternative B (with discussion of potential development of a sports arena instead of the ballpark); (2) removal or closure of certain piers in the Project Area that would be surplus to the needs of maritime uses, with the creation of Bayfront open space where piers are demolished, as a variant to Alternative A; (3) potential development of a sports arena on Rincon Hill, outside the Project Area, as a variant to the cumulative context of all Alternatives; and (4) potential development of residences and retail uses outside the Project Area and near China Basin Channel, as a variant to the cumulative context of all Alternatives.

Neither of the development Alternatives (A and B) is necessarily indicative of an actual outcome; rather, those Alternatives are designed to represent a range of future physical changes, all of which are possible under the WLUP, so that the EIR can cover a broad range of development and activities. The WLUP, if adopted, and its resulting physical effects would likely be some combination of Alternatives A and B with or without their variants, and the adopted Plan might have other components that would fall within the range of impacts analyzed.

APPROVAL PROCESS

The Port Commission is the decision-making body for the Port of San Francisco. The Port Commission will have approval authority for the WLUP, although implementation of the Plan would require various approvals from other agencies. The San Francisco Planning Department, Office of Environmental Review, prepared this EIR for the Waterfront Land Use Plan. Following completion and certification of the EIR by the San Francisco Planning Commission, the Waterfront Land Use Plan would be considered for adoption by the Port Commission. The Planning Commission and Board of Supervisors would consider action on proposed conforming amendments to the San Francisco General Plan, City Planning Code and Zoning Map. The San Francisco Bay Conservation and Development Commission (BCDC) would be asked to take appropriate action on conforming amendments to plans and policies under its jurisdiction. California State Legislature action could be required to amend or clarify existing legislation such as the McAteer-Petris Act.

MAIN ENVIRONMENTAL IMPACTS AND MITIGATIONS

The main environmental impacts are summarized below by topic. Probable **significant impacts** are noted and bolded. Mitigation measures, which address significant impacts, are summarized here and are listed in Chapter VI by topic for ready reference. Improvement measures, which address impacts not judged to be significant, are also summarized here and listed in Chapter VI.

LAND USE

Land uses in the Project Area would change under Alternative A and, especially, Alternative B. Conflicts could occur between industrial uses (maritime and non-maritime) that could generate noise, dust, night lighting and truck traffic, and sensitive receptors consisting of existing and planned residential, commercial and open space uses, particularly in and near the South Beach/ China Basin subarea and in residential areas near the Southern Waterfront subarea. Although mitigation measures and regulations are available to minimize the effects of various land use conflicts by addressing specific impacts of noise, light/glare, truck traffic, and dust, there is no assurance that sufficient mitigations would be available for or applied to specific future projects or cumulative future development to completely avoid a potential **significant impact** of land use conflicts.

POPULATION, HOUSING, AND EMPLOYMENT

The No Project Alternative could add 80 housing units with a population of 140, and 1,590 permanent jobs. Alternative A could add 230 housing units with a population of 460, and 2,560 jobs. Alternative B is assumed to add no housing; 6,850 jobs could be added. In addition, temporary construction jobs could be added under all three Alternatives, especially Alternatives A and B. No significant population, housing or employment impact would occur under any of the Alternatives.

TRANSPORTATION

Development and activity increases that could occur under the WLUP would generate person trips, affecting regional and local traffic and transit. Resulting traffic would contribute to increased congestion on regional traffic facilities during peak hours. Alternative B would contribute to cumulative increases in traffic congestion on approaches to the Bay Bridge, and would increase incident conditions that result in backups and congested conditions on City streets, sufficient to be considered a **significant impact**. General mitigations to reduce vehicular traffic (e.g., providing additional transit capacity, and instituting Transportation Demand Management programs, Transportation Mitigations 5 and 7) could potentially reduce or avoid the impact, but avoidance cannot be assured because the success of these measures cannot be predicted.

Local intersections were studied for weekday P.M. and Saturday midday peak hours. For the weekday P.M. peak hour, under Alternative A, project-generated traffic would cause one intersection, The Embarcadero at Bay Street, to deteriorate to an unacceptable level of service, a **significant impact**. Installation of a right turn arrow for the Bay Street approach would mitigate the impact to an acceptable level of service. Under Alternative B, five intersections would deteriorate to an unacceptable level of service in the weekday peak: The Embarcadero at North Point, Bay, Sansome, and Bryant Streets; and the intersection of Third and King Streets. Providing a right turn pocket at North Point Street and The Embarcadero by removing two to three parking spaces and a red zone would improve that intersection's service to an acceptable level. Under Alternative B, The Embarcadero at Bay Street would deteriorate to an unacceptable level of service during the Saturday midday peak. A right turn arrow would improve Saturday level of service at The Embarcadero and Bay Street to an acceptable level, but would not be sufficient to avoid the weekday P.M. peak hour impact at that intersection. Thus, **significant impacts** would unavoidably occur at four intersections in the weekday p.m. peak hour under Alternative B.

Project-generated transit trips would not cause significant impacts to regional transit operators. Transit trips would generally not cause significant impacts on San Francisco Muni service to and from the waterfront based on scheduled service, though under Alternative B Muni service from the waterfront across the Northwest screenline would deteriorate to an unacceptable level of service if recent shortfalls in delivered seating capacity relative to scheduled capacity were to continue, and specific lines serving the waterfront could experience increased crowding. Under Alternative B, demand in the Project Area would exceed the planned capacity of Muni F-Line service between the Ferry Building and Fisherman's Wharf. Institution of shuttle service along the waterfront and/or inclusion of the Project Area in existing, continuing, and potential future funding mechanisms for Muni would reduce or avoid impacts (Transportation Mitigations 5 and 6).

Project-generated increases in pedestrian volumes could cause traffic and safety conflicts along The Embarcadero, particularly under Alternative B. The magnitude and location of these potential impacts cannot be predicted at this time, but the possibility of **significant impacts** cannot be ruled out. This EIR identifies various general measures (Section VI.D.) that would improve pedestrian circulation. Environmental review required for projects which may be proposed under the WLUP would study and determine site and project-specific impacts and possible mitigations.

NOISE

No long-term significant noise impacts would be associated with any of the Alternatives. Alternative B, and to a much lesser extent, the No Project Alternative and Alternative A could produce short-term construction noise impacts. Improvement measures to minimize construction noise are listed in Section VI.E. As noted under Land Use, conflicts between noise-generating maritime and non-maritime industrial uses and sensitive receptors such as existing and planned residential, commercial and open space uses could occur under any of the Alternatives. Measures proposed in the WLUP would reduce noise conflicts that may be of concern by limiting noisy uses in C-2 districts within 100 feet of residences and selecting and designing activities in the Rincon Pier Mixed Use Opportunity Area to minimize traffic noise impacts from the Bay Bridge. The industrial maritime growth assumed under Alternative B would generate noise levels that could interfere with enjoyment of planned and potential future open space and wetlands in the South Beach/China Basin and Southern Waterfront subareas. An improvement measure would require consideration of noise reducing techniques at industrial maritime sites.

AIR QUALITY

Implementation of the WLUP would involve construction of various development projects. During construction, fugitive dust emissions could be generated leading to violations of standards for fine particulate matter. Implementation of a dust abatement program would mitigate the potential impact. Increases in vehicle travel to and from the waterfront would occur, but would not lead to any violations of carbon monoxide concentration standards at critical intersections. Total emissions that would be generated under Alternative A would exceed the Bay Area Air Quality Management District (BAAQMD) **significant impact** threshold for projects of 150 pounds per day for NO_x and PM_{10}; under Alternative B, the thresholds for HC, NO_x, SO_x, and PM_{10} would be exceeded. Under all three Alternatives, total emissions of NO_x and SO_x would exceed one percent of San Francisco County emissions, the **significant impact** threshold for projects.

Most pollutant emissions that would be generated by the project would be part of regional emissions already anticipated to occur in 2010. Traffic emissions under the No Project Alternative would be part of the future cumulative traffic emissions. Traffic emissions under Alternatives A and B would be higher due mostly to a shift in traffic to the waterfront Project Area from other sites in the region. Some of the increase would be due to new traffic growth or increase in vehicle miles generated by waterfront attractors. Measures to reduce vehicle trips (e.g., providing additional transit capacity, and instituting Transportation Demand Management programs, Transportation Mitigations 5 and 7) could potentially reduce or avoid the impact, but avoidance cannot be assured because the success of these measures cannot be predicted. Marine vessels would be a substantial contributor to the emission totals. The relatively high levels of pollutant emissions under all Alternatives partly reflects substantial increases in ferry and excursion boat activity assumed for each Alternative.

The BAAQMD significance thresholds are intended to be applied to individual projects. A land use plan covering a wide area, such as the WLUP, usually involves buildout of a number of individual projects and increases in activity levels in a variety of locations. Thus, it is not surprising that, taken together, the cumulative growth that could occur under the WLUP would exceed significance thresholds designed for individual projects. BAAQMD is considering, but has not adopted, draft CEQA guidelines that would relate specifically to local plans. Preliminary analysis indicates aspects of the project (the potential for an increase in regional vehicle trips proportionately higher than population increases, and the potential for exposure of some residential uses to three existing sources of toxic air contaminants) could also generate significant air quality impacts based on the draft BAAQMD CEQA guidelines.

VISUAL QUALITY

Implementation of the WLUP could result in both beneficial and adverse effects on visual quality and urban design. Policies in the WLUP are intended to ensure beneficial design, but there is no way to predict how successfully the policies would be implemented in the future on a development proposal-by-proposal basis. It is possible that development under the WLUP could obstruct view corridors, block views of waterside features from certain locations, and degrade the visual continuity of pierhead and bulkhead buildings, potentially resulting in a **significant effect**. At the same time, new development, if well-designed, could open up new water views, rehabilitate deteriorating visual resources, and increase public access and amenities along the waterfront. Mitigation measures call for development of urban design guidelines and policy language to be incorporated into the WLUP to protect views and enhance and protect other visual resources, and to consider visual resource enhancement and protection early in the development review process.

BIOLOGICAL RESOURCES

Short-term impacts on biological resources would occur from dredging and repair/replacement of pier structures to accommodate potential development. A **significant impact** to commercial Pacific herring could occur if pier piling repairs or replacement were to take place during the December to March spawning period. Avoidance of these activities during that time, and various dredging and pier reconstruction techniques identified as mitigation and improvement measures in Section VI.H. would ensure that impacts would be less than significant. Placement of new fill and new piers could have long-term effects on aquatic habitat by decreasing open water or shoreline, changing tidal flushing patterns, and/or shadowing areas below piers, lowering oxygen levels. Because of the limited amount of new fill and replacement fill that would occur in relation to total habitat, and assuming fill is placed in accordance with federal, State, and regional regulations, no long-term significant impacts would be expected. Removal of piers would reduce the substrate habitat they provide; impacts would not be significant because of the limited amount that is likely to be removed, the incremental nature of removal, and the dispersed locations along the entire waterfront. An improvement measure could involve leaving old pilings in place. Cumulative effects, not considered significant, could occur due to increases in stormwater runoff, which contains pollutants harmful to organisms. An improvement measure could involve installing of oil/water separators or connecting piers to the City's wastewater sewerage system as development occurs. Existing and planned wetlands could be adversely affected by runoff from interim industrial uses under Alternative A and extensive cargo shipping and ship repair activities under Alternative B. An improvement measure calls for the establishment of best management practices for these uses.

Demolition of abandoned buildings in the Project Area could destroy habitat for Townsend's western big-eared bat, a California Species of Special Concern, that could constitute a **significant impact**. Mitigation would consist of surveying buildings prior to demolition and installing exclusion devices prior to demolition if bats are found, and avoiding demolition during the bats' nursery season.

GEOLOGY, SOILS AND SEISMICITY

Settlement and subsidence could potentially affect existing and new structures in the Project Area. Earthquake hazards, present throughout the Bay region, are exacerbated due to acceleration of ground shaking on, and potential liquefaction of, the filled land that constitutes most of the Project Area. Construction techniques can mitigate much of the hazard. Suggested mitigations (Section VI.I.) include requiring geotechnical evaluation prior to proposed new construction or reuse of existing structures that would increase occupancy; protecting temporary and permanent open sub-grade structures and pits from damage and preventing hazards they pose to people; preparing a dewatering and excavation plan where applicable; requiring review of new dredging activities by an engineering geologist; requiring Port facilities and tenants to carry out measures to reduce non-structural earthquake hazards and plan for a 72-hour emergency response reserve of supplies and equipment; require Port preparation of an earthquake preparedness plan; require measures to reduce earthquake safety risks related to hazardous materials; require all feasible lifeline service maintenance measures in new facilities; require preparation of emergency access plans; and require inspection and repair or demolition of piers in poor condition. Notwithstanding the available mitigation measures, under all Alternatives and particularly Alternative B, increased numbers of people would be present along the waterfront and the hazard to life and property from earthquakes would correspondingly increase. Under Alternative A, a more moderate increase in persons present along the waterfront would occur than under Alternative B but they would occupy older, more hazardous buildings. Therefore, **significant seismic hazard impacts** are unavoidable under both Alternative A and Alternative B.

HYDROLOGY AND WATER QUALITY

Filling and dredging associated with ongoing or new development or activity would have short-term, localized impacts on water quality. Dredging would contribute to unavoidable **significant impacts** on regional water quality associated with disposal of dredged material, currently being studied by the U.S. Army Corps of Engineers as part of a long term management strategy for Bay dredging. Expanded dredging (over existing maintenance levels) and filling would be highest under Alternative B, associated with maximum maritime activity and considerable new waterside development involving possible reconstruction and/or reconfiguration of piers.

The No Project Alternative, Alternative A, and Alternative B respectively represent increasing levels of development and activity, associated with increasing potential for water quality impacts from runoff, accidental spills, shipping and boating activities, industrial uses, and construction activities. Placement of new Bay fill could cause local long-term changes in flow patterns or tidal flushing, which could affect water quality; the effect is not likely to be substantial. Generally, existing regulations and requirements imposed on these activities would prevent significant water quality impacts that may be revealed by project-specific environmental reviews. For example, placement of fill would be permitted by regulatory agencies contingent on a finding of no significant water quality impact. Improvement measures are identified (Section VI.J.), including wastewater controls and use of Best Management Practices for interim (as well as long-term) uses; erosion control, limiting construction on windy days, precautions to avoid lead-based paint chips entering the Bay during demolitions, and other measures applicable to construction and demolition; and obtaining and ensuring funding for annual updating of the San Francisco Oil Spill Prevention and Response Plan. Environmental reviews that would be conducted for individual proposals that may be advanced pursuant to the WLUP would identify specific potential impacts and mitigations.

PUBLIC SERVICES AND UTILITIES

Services are generally available to support increases in development and activity associated with all three Alternatives. New service needs, as well as potential new revenue sources to fund those needs, would be greatest under Alternative B. Under Alternative B, demand for police services would be substantial. No significant environmental effects would occur.

ENERGY

Land use changes would generate use of energy for construction, operations, and transportation associated with each Alternative. By far the greatest increase in energy use would occur under Alternative B. No significant environmental effect would occur. Section VI.L. lists a number of improvement measures that could conserve energy.

HAZARDOUS MATERIALS

Hazardous materials are known to exist in the soil and groundwater at various locations throughout the Project Area. Land development that could occur pursuant to the WLUP would be required by Article 20 of the San Francisco Public Works Code and State and federal regulations to test soil and groundwater and remediate any contamination found prior to construction. No significant impacts are anticipated.

HISTORIC ARCHITECTURAL RESOURCES

The Project Area contains designated structures of architectural and/or historical merit, and numerous other structures of potential merit. Development under any of the Alternatives could involve demolition or inappropriate alteration of significant structures, a potentially **significant effect**. The Waterfront Land Use Plan calls for development of guidelines for historic preservation. However, at this time the Plan contains no comprehensive list of historic or architecturally significant structures nor any assurances that such structures will be preserved. Therefore, for purposes of this analysis, resources identified as potentially significant are considered significant, subject to further review that would evaluate those resources in more detail. Mitigation could consist of identifying such structures, committing to their preservation, and defining allowable changes to significant historic resources. To prevent potential deterioration or destruction of historic architectural resources in the absence of specific proposals to restore or rehabilitate them, the Port should prioritize resources in need of repair and maintenance and fund the needed preservation work.

ARCHAEOLOGICAL RESOURCES

Most of the Project Area was underwater prior to 1850. Therefore, there is relatively little likelihood that excavation could encounter prehistoric, Spanish Period, or Mexican Period resources. Post-1850 resources are known to occur in and near the Project Area and excavation could encounter such resources, potentially resulting in a **significant effect**. The larger-scale and more numerous development activities assumed under Alternative B would be the most likely to involve excavation. Mitigation measures to reduce impacts to archaeological resources are identified in Section VI.O., involving consideration of avoiding archaeological resources early in the project planning process, and setting up a process to examine sites proposed for excavation for resources and investigation of any resources that may be found.

CONSTRUCTION

Construction impacts would be short-term in and near any one potential development site, but could occur throughout the Project Area almost continuously through 2010 under Alternative B. Impacts include short-term disruption of traffic, generation of noise and dust, as well as effects on biology and water quality due to dredging and pier replacement associated with certain uses in certain locations. Various mitigation measures are available (see Sections VI.D., VI.E., VI.F., VI.H., and VI.J.).

GROWTH INDUCEMENT

The land use changes under the No Project Alternative would be consistent with overall local and regional land use assumptions implicit in the Association of Bay Area Governments (ABAG) *Projections '94*, which describes the overall economic/employment growth scenario for San Francisco and the region between 1995 and 2010. No growth inducement would occur.

New uses under Alternative A would represent a shift of some retail, hotel, wholesale trade/promotion, assembly/entertainment/recreation, and light industry uses from other San Francisco locations. That is, growth of most of these uses in the Project Area would likely occur at the expense of their location elsewhere in San Francisco, particularly with respect to most retail, warehouse, and industrial uses. Certain uses, however, such as assembly/entertainment/recreation and certain specialty retail uses, could locate in the Project Area due to the unique nature of the San Francisco waterfront setting. Their location could occur on the waterfront instead of elsewhere in the City, and/or could represent a net addition to future City or regional uses that would not have occurred elsewhere. However, whether representing mere locational shifts in future City land use, or additions to future land use Citywide or regionwide, the total change in use in the Project Area is quite small compared with Citywide or regionwide amounts of these land uses.

New uses under Alternative B would represent shifts from other locations in San Francisco as described for Alternative A, plus an increase over forecast growth for the Project Area in the water-dependent uses of cargo shipping and passenger cruises and the non-water dependent category of assembly/entertainment/recreation uses. Alternative B assumes that the San Francisco waterfront, as a place of special qualities of regional, national, and international stature, will attract certain uses that would not otherwise locate in San Francisco or, possibly, the region. In this category would be assembly/entertainment/recreation uses such as museums, urban entertainment complexes including retail, entertainment, sports, high-tech, and/or themed attractions; expanded cruise terminal and related facilities such as supporting retail and hotel development; and visitor and specialty retail uses such as restaurants, bars, nightclubs, and theme retail catering to day visitors and tourists as well as San Francisco residents. The location of these uses could occur on the waterfront instead of elsewhere in the City, and/or could represent a net addition to future City or regional uses that would not have occurred elsewhere. However, whether representing mere locational shifts in future City land use, or additions to future land use Citywide or regionwide, the total change in use in the Project Area is quite small compared with Citywide or regionwide amounts of these land uses.

VARIATIONS ON ALTERNATIVES

BALLPARK OR ARENA AT CHINA BASIN

This Variant to Alternative B involves a 42,000-seat ballpark and accessory restaurant, retail and office uses near Third and King Streets (Pier 46B, Seawall Lot 336, and property owned by Caltrans), proposed by the San Francisco Giants. The ballpark would be 130 feet in height, which would be within the amended 150-foot height limit approved by San Francisco voters in March 1996. One or more aspects of a ballpark at the site would have to be approved by the Board of Supervisors, San Francisco Planning Commission, the Port Commission, the Bay Conservation and Development Commission, and possibly the State Lands Commission. Changes to the San Francisco General (Master) Plan would be required. Prior to any of these approvals, a separate, detailed environmental review would have to be completed.

The proposed ballpark would replace baseball use at 3Com Park at Candlestick Point and would host 81 regular season baseball games: about 40 on weekday nights beginning at 7:30 P.M., 26 on weekend afternoons, and 15 on weekday afternoons starting at noon to 1:00 P.M. During these times, the ballpark could generate intermittent land use conflicts (traffic, noise, air quality, light/glare) with existing and planned residential and commercial development in the vicinity. Traffic congestion around the site and on streets connecting with regional traffic facilities would occur before and after scheduled games. Intersection levels of service could deteriorate, with one intersection, The Embarcadero at Brannan Street, potentially deteriorating to an unacceptable level of service in the 5:00 P.M. to 6:00 P.M. peak hour due to the 40 weeknight games at the ballpark in conjunction with Alternative B and cumulative traffic. Congestion could increase after 6:00 P.M. as more people arrive closer to game time. The 15 weekday games could contribute to earlier, extended times of congestion as departing drivers mix with evening commute driver traffic. Various mitigation measures are available, including police traffic control, prohibitions on various traffic movements before and after games, and parking restrictions on critical access streets.

Transit ridership would be substantial, given the proximity of the site to Muni Metro light rail service (under construction), four Muni bus lines, and CalTrain. To the extent capacity may not be available to meet demand, subsidy could be required.

About 6,430 existing parking spaces available weekday evenings within a 15-minute walk of the ballpark site were surveyed for the Giants, who also intend to lease 5,000 to 5,500 off-street spaces nearby on an interim basis. Longer range plans call for about 4,800 permanent off-street spaces nearby. Parking demand for a sell-out game is estimated at about 11,670 spaces, roughly balancing on- and off-street supply. Considerably fewer parking spaces would be available for the approximately 15 weekday afternoon games.

Traffic, crowd, and loudspeaker noise could impact nearby residences. Design of the structure to shield residences from noise could reduce the impact. Effects on air quality are unknown; the EIR for the ballpark project will contain a detailed air quality analysis. Annoying light and glare from night lighting could affect nearby residences and views from more distant locations. State-of-the-art lighting fixtures, shielding, and design can reduce the effects. Soil and groundwater contamination is known to exist on the site. Remediation would be required prior to construction of a ballpark or any other development.

A 22,000-seat arena on the China Basin site is envisioned in the Waterfront Land Use Plan, but is not proposed at this time. Impacts of such a facility would be the same or less than those of a ballpark.

REMOVAL OR CLOSURE OF SURPLUS PIERS

This variant to Alternative A assumes that interim non-public trust uses on piers would not be permitted or that there would be a lack of demand for such uses, and that some of the resulting vacant piers would be closed to the public or demolished to avoid long-term maintenance and liability problems and to open up Bay views as open space resources. Pier removal could require approval by various agencies with Bay jurisdiction, including BCDC, U.S. Army Corps of Engineers, Regional Water Quality Control Board, and others. Short-term noise, air quality, biological resource, and water quality impacts could occur. Demolition of piers could involve hazardous materials; remediation or management as required by law would minimize safety risks. Generally, due to the lesser development and activity levels associated with this variant, and the reduction in intensive industrial uses, the variant would slightly reduce the long-term environmental effects that would occur under Alternative A. However, historic resources could be lost either through demolition or deterioration.

RINCON HILL ARENA

This variant involves concepts proposed by the U.S. Postal Service being studied in a separate environmental impact report/statement for a site generally bounded by Spear, Harrison, Beale and Folsom Streets: a 21,000-seat sports/entertainment arena and 250,000 to 450,000 square feet of associated entertainment-oriented retail space; a 10,000-seat music/theater event center, multiscreen cinema complex, and 300,000 square feet of retail space; or 1,000 residential units and 168,000 square feet of retail space. Because this project is outside the WLUP Project Area, analysis in this EIR is limited to the potential effects of such projects on the assumed future cumulative context. Traffic generated by an arena could result in unacceptable levels of service at nearby intersections under any of the project Alternatives, including intersections in and near the Project Area, especially the South Beach portion of the South Beach/China Basin subarea. Preliminary results of Rincon Hill project transportation analyses show Embarcadero/Bryant at LOS E or F for most Rincon Hill alternatives, under WLUP No Project assumptions (ABAG forecast of regional growth). Resulting congestion would be worse yet under Alternative A or B. Contribution to regional air quality violations could potentially occur, under any of the EIR Alternatives.

If the Rincon Hill project were undertaken, particularly as a sports and entertainment arena, and the proposed ballpark were also developed, there could be instances in which events would occur in both venues at the same time. In such instances, there could be substantial congestion at local intersections and on the I-80, U.S. 101, and I-280 freeway ramps. Depending on the timing of the events, congestion would likely be worse than described in Section V.D., Transportation, for Alternative B. Mitigation for these impacts could take the form of coordinating schedules of events in the two facilities to avoid overlapping departure of fans from both venues. The EIRs for the proposed China Basin ballpark and Rincon Hill project will analyze potential transportation impacts in considerable detail.

RESIDENTIAL AND RETAIL USES IN MISSION BAY

Under this variant, the Mission Bay Specific Plan and zoning would be changed to eliminate office uses north of China Basin Channel, in the area bounded by Townsend, Third, Berry and Sixth Streets, in favor of about 2,000 housing units and up to 350,000 square feet of retail space. Because this area is outside the WLUP Project Area, analysis in this EIR is limited to the potential effects of such projects on the assumed future cumulative context. Such a change, if built out by this EIR's analysis year of 2010, would increase traffic in the area but not sufficiently to deteriorate levels of service forecast under any of the Alternatives. In conjunction with a China Basin Ballpark, this variant would not change levels of service reported under the ballpark variant.

II. BACKGROUND

A. INTRODUCTION AND OVERVIEW

WATERFRONT LAND USE PLAN

This document is the Environmental Impact Report (EIR) for the Waterfront Land Use Plan (WLUP), proposed by the Port of San Francisco (Port). The Port has authority to operate, maintain, regulate and improve the harbor properties of San Francisco that were transferred in trust to the City and the County of San Francisco from the State of California with the Burton Act in 1968. San Francisco voters, by the passage in 1990 of Proposition H, imposed a moratorium on City agency approval of certain new uses until a WLUP was completed to guide long-term use and development of Port lands. Although Proposition H imposed this plan requirement on only a portion of Port land holdings, the Port of San Francisco decided to develop a land use plan (the "Waterfront Land Use Plan") for essentially the entire area under its jurisdiction, which extends for approximately 7.5 miles, generally from the Hyde Street Pier to India Basin.[1]

A Draft Waterfront Land Use Plan (also referred to as "the Plan") was prepared by the Waterfront Plan Advisory Board (Advisory Board), created by the San Francisco Port Commission, through a public planning process that began in 1991. The Advisory Board's Draft WLUP was presented to the Port Commission in July 1994. Port staff, while supporting the majority of the Advisory Board's recommendations, proposed some revisions for Port Commission review, as contained in a Revised Draft WLUP dated November 4, 1994. At its January 24, 1995, meeting, the Port Commission authorized the preparation of an EIR on the Revised Draft Plan, as further revised at that Port Commission meeting.

The Port Commission is the decision-making body for the Port of San Francisco, which operates as a semi-autonomous, self-supporting City agency (i.e., the Port receives no General Fund monies from the City). The Port Commission will have approval authority for the WLUP, although implementation of the Plan would require various approvals from other agencies. The San Francisco Planning Department, Office of Environmental Review, prepared this EIR for the WLUP. Following completion and certification of the EIR by the San Francisco Planning Commission, the WLUP would be considered for adoption by the Port Commission. The

Planning Commission and Board of Supervisors would consider action on proposed conforming amendments to the San Francisco General (Master) Plan and City Planning Code. The San Francisco Bay Conservation and Development Commission (BCDC) would be asked to take appropriate action on conforming amendments to plans and policies under its jurisdiction.

ORGANIZATION OF THIS REPORT

This EIR is organized into ten primary chapters. The preceding chapter, I. Summary, presents a summary of the project description, principal environmental effects, and mitigation measures. This second chapter provides an introduction to the waterfront planning process; describes the area that would be affected by the WLUP; and provides a brief history of the Port of San Francisco, including past planning efforts and the current planning process that was mandated by passage of Proposition H by San Francisco voters.

Chapter III, Project Description, provides a summary of the Draft WLUP as endorsed for environmental review by the Port Commission, including the geographical subareas of the plan analysis; objectives, goals, policies and development standards; new land uses that would be acceptable in each subarea and existing land uses that would be permitted to remain; and conforming changes to the San Francisco General (Master)[2] Plan, City Planning Code and Zoning Map, and BCDC plans and policies to implement the WLUP. Chapter III also describes the EIR's approach to analysis of the Draft WLUP. That section describes the programmatic nature of the EIR (meaning that the EIR analyzes the Draft Plan at a general level of detail, and that additional, more detailed environmental review could be required for specific projects that would be proposed in the future) and outlines the methodology and assumptions behind the EIR analysis, including the rationale for choosing a certain mix of land uses for analysis, geographical extent of the analysis, the time period covered by the analysis, and the relationship to other environmental review documents.

The Draft WLUP specifies a range of acceptable land uses within each subarea of the Port's jurisdiction. In order to have a basis for conclusions as to the Plan's potential environmental effects, it has been necessary for the EIR authors to construct development scenarios that could potentially occur under the Plan. The Project Description sets forth three such scenarios, or Alternatives, two of which could occur with adoption of the WLUP and one that could occur were no Plan to be approved. While these three Alternatives are by no means the only possible outcome for Port lands, they represent a reasonable range of possible future outcomes, depending on the actions ultimately taken by the Port Commission and other regulatory bodies, that have been developed for purposes of evaluating a full array of environmental impacts. Chapter III includes a description of each of the Alternatives along with the economic, regulatory and planning assumptions used in developing each Alternative. It also includes a brief description of several variants to the Alternatives that focus on specified major land uses, different policy directions, or different Plan implementation. Finally, Chapter III describes the approval process for the EIR and WLUP, including implementing amendments to General (Master) Plan, Planning Code, and BCDC plans and regulations.

Chapter IV describes the environmental setting; that is, the physical conditions that exist as of 1994/1995, which is the starting point for the EIR analysis. Chapter V describes the impacts of each Alternative by environmental topic area, such as transportation, biological resources, and population, employment and housing. Chapter VI presents mitigation measures proposed as part of the project or identified by the EIR authors that could minimize or eliminate potentially significant environmental effects. Chapter VII describes the anticipated impacts of the variants. Chapters VIII and IX describe significant effects that cannot be mitigated to a less-than-significant level and significant irreversible environmental changes, respectively. Chapter X outlines other alternatives considered by the EIR preparers, and describes the reasons for elimination of those alternatives from more detailed study.

B. LOCATION OF AND AUTHORITY OVER WATERFRONT LAND USE PLAN PROJECT AREA

LOCATION OF THE PROJECT AREA

The area covered by the Draft WLUP, also known as the Project Area for this EIR, includes essentially all lands under the jurisdiction of the Port of San Francisco.[1] As noted previously, the Project Area extends for approximately 7.5 miles, generally from the Hyde Street Pier to India Basin, and occupies much of the Bayfront property in San Francisco. (Refer to Figure 1 in Chapter III, Project Description, p. 13.) The Project Area boundary extends inland from the Bay shore by varying amounts, from one block inland of The Embarcadero along much of the northeastern and northern waterfront, to as far as several blocks inland along areas located south of China Basin Channel. Generally, the Project Area boundary is no more than about one-eighth of a mile from the shoreline. (In some instances, the EIR addresses a "study area" that extends inland of the Project Area to include, for example, traffic impacts at nearby intersections. The EIR "study area" is described in the Environmental Setting and Impacts sections of this report.) The Project Area includes virtually all the piers on San Francisco's Bayfront except those at Fort

Mason and westerly and most of the piers at the Hunters Point Shipyard. The inland areas (on top or inland of the sea wall that underlies the shoreline) within the Port's jurisdiction are referred to as "seawall lots" and are identified numerically in a numbering pattern that is distinct from the City of San Francisco's Assessor's block numbering system. (Each seawall lot is also separately identified by number as a City block; in this report, seawall lots are referred to using the Port's numbering system except where specified. Appendix B contains a cross-reference between seawall lot numbers and Assessor's block and lot numbers.)

LAND USE AUTHORITY OVER THE PROJECT AREA

In addition to the Port Commission, the San Francisco Planning Commission and Board of Supervisors have regulatory authority over Port lands through the San Francisco Master Plan and City Planning Code. The California State Lands Commission has jurisdiction and oversight control over lands granted in trust to the Port of San Francisco (most of the land in Port jurisdiction), and exercises its authority to ensure compliance with the terms of the trust grant. Under the McAteer-Petris Act of 1965, BCDC regulates all development in San Francisco Bay and within 100 feet of the shoreline, including development on piers, through policies contained in the *San Francisco Bay Plan,* the *San Francisco Special Area Plan* and the *San Francisco Pier 7-24 Total Design Plan,* along with the *San Francisco Bay Area Seaport Plan* (with the Metropolitan Transportation Commission; the *Seaport Plan* is currently being revised). These plans and policies (and others that are relevant to the WLUP) are discussed in Section IV.A., Environmental Setting, Public Plans, Policies, and Regulatory Agencies.

C. BRIEF HISTORY OF THE PORT

From 1863 until 1968, the Port of San Francisco was controlled by the State of California, and the use and development of the Port were under the jurisdiction of the State Board of Harbor Commissioners. In 1968, control of the Port was transferred to the City under the Burton Act. The Burton Act required the City to create a Port Commission "to use, conduct, operate, maintain, manage, regulate, improve and control" the Port, within the requirements of State law. Among the responsibilities transferred to the Port was the fulfillment of public trust objectives (the concept of the public trust is discussed in Section IV.A., Environmental Setting, Public Plans, Policies, and Regulatory Agencies, pp. 103-104, and in Appendix D., Assumptions Used in Development of EIR Alternatives). The Burton Act also required that all revenues generated by Port facilities be held in a separate fund and used only for Port purposes.[3]

Like many ports throughout the country, the Port of San Francisco has evolved from primarily an industrial waterfront to a waterfront of many uses. Many of the Port's finger piers were constructed between 1912 and 1930 in response to flourishing ferryboat and break-bulk shipping industries. The Port's importance as a commercial and maritime center peaked during World War II, at which time the waterfront was dominated by industry, maritime operations and railroad terminals.

The industrial activity on the finger piers declined, however, following World War II for several reasons. Completion of the Bay Bridge and Golden Gate Bridge in the late 1930's led to a dramatic reduction in the ferryboat industry, rendering many piers designed to serve this trade obsolete. In the 1960's, the cargo industry began to shift away from break-bulk cargo (freight that is made up of similar sized pieces loaded loosely or on palettes) to containerized cargo (freight that is pre-loaded into standard size boxes). This trend, combined with deregulation of the transportation industries in the United States, gave rise to a new wave of "intermodalism" whereby water, rail and motor carriers organized to create total transportation packages. The cargo shipping industry demanded intermodal terminals (including large areas for container storage and railroad operations) rather than break-bulk facilities on finger piers. In the meantime, the City's ship repair industry suffered economic decline when U.S. subsidies to the industry were reduced and eventually eliminated but subsidies to the foreign competitors continued. More recently, military downsizing has led to further declines in the ship repair industry.

These trends in the transportation and ship repair industries as well as Citywide land use trends led to a general shift and consolidation of cargo and ship repair activity in San Francisco to the southern waterfront - the area south of China Basin. Today, cargo operations are primarily handled at one of the Port's modern container terminals at Pier 94/96, which can accommodate the transfer of container cargo from ship to rail. Container terminal facilities are also located on Pier 80, which was closed in 1995 due to the departure of shipping lines. Ship repair operations take place at the former ship building facilities at Pier 70 and a portion of Pier 50. Other factors such as truck access to the interstate highways and dredging regulations reinforce the consolidation of these operations in the southern waterfront.

North of China Basin, a mix of new activities on a few Port sites and in the vicinity emerged as the area's industrial maritime activities moved south. Today, this transition is reflected in a land use pattern that includes commercial (rather than industrial) maritime activities, commercial and tourist-oriented uses, residential developments and open space improvements.

Despite this transition, many Port properties north of China Basin have not evolved as quickly as neighboring non-Port properties that surround them. This is in part due to more restrictive State, regional and local land use policies on Port property.

When the City gained control of the Port in 1968, it assumed responsibility for $55 million in outstanding State general obligation bonds and agreed to invest $100 million for harbor improvements. With the consolidation of modern cargo improvements in the southern waterfront, new commercial development on the northern waterfront was expected to generate the required revenue to support the debt and investment responsibilities that were transferred to the City. However, many early development plans involving Bay fill or high-rise development were not consistent with the public's view of appropriate northern waterfront development and regulatory limits were placed on the Port. For example, in response to public outcry over high-rise development, the Planning Commission imposed a 40-foot height limit on most Port property north of the Ferry Building. An opinion issued by the State Attorney General's office stated that BCDC could not permit new Bay fill for non-water-oriented uses even if an equal amount of existing fill was removed.[4]

Given these new regulations, the State recognized that the Port was not going to be able to fulfill its obligation to invest $100 million and reduced the requirement to $25 million. Subsequent regulations have been handed down throughout the 1980's that further limit the development options for the property.

Today the Port of San Francisco continues to experience declining activity and revenue from cargo shipping. Many of its facilities are vacant or underutilized and many piers and structures are deteriorated. The Port envisions the WLUP as a tool to revive San Francisco's waterfront by permitting mutually supportive water-oriented and non-water-oriented use and activities.

D. PROPOSITION H

Proposition H was adopted by the voters in November 1990. The language of the ordinance indicates that (among other concerns) the people of San Francisco find the waterfront to be an "irreplaceable" public resource and that it is in the interests of San Francisco "to develop a strong and economically vital waterfront with adequate public access to and restoration of San Francisco Bay." The ordinance states that ". . . it is the policy of the City and County of San Francisco that:

"a. the waterfront be reserved for maritime uses, public access, and projects which aid in the preservation and restoration of the environment;

"b. where such land uses are infeasible or impossible, only acceptable non-maritime land uses as set forth in this ordinance shall be allowed;

"c. a waterfront land use plan shall be prepared. . . to further define acceptable and unacceptable non-maritime land uses and to assign land uses for specific waterfront parcels."[5]

The ordinance imposed a moratorium on City actions approving certain new uses or projects until the Port Commission prepared a waterfront land use plan for certain lands that are owned by or under the control of the Port (on piers or within 100 feet of the shoreline, or lands south of Pier 98 that are subject to the "Shoreline Guidelines" as shown on Map 8, Eastern Shoreline Plan, of the Recreation and Open Space Element of the San Francisco Master Plan, in effect as of January 1, 1990). The Port Commission voluntarily extended the scope of the planning area beyond that specified in Proposition H to include essentially all lands owned by the Port.[1] The Plan must define maritime, acceptable non-maritime, and unacceptable non-maritime land uses. The ordinance includes a list of these uses, which must be included in the waterfront plan unless deletion is approved by City voters.

- **Maritime uses** include (but are not limited to) maritime cargo handling and storage, ship repair, fish processing; marinas and boat launches, ferry boat, cruise ship, and excursion boat facilities, ship berthing, maritime construction and salvage, and marine equipment and supply;

- **Acceptable non-maritime land uses** include (but are not limited to) parks, esplanades, wildlife habitat, recreational fishing piers, ecological restoration projects, and transit and traffic facilities; and

- **Unacceptable non-maritime land uses** include (but are not limited to) hotels.[5]

The ordinance provides for uses to be added to each of these categories during preparation of the waterfront land use plan. Other requirements of the ordinance include consultation with and a public hearing conducted by the City Planning Commission to ensure consistency with the City's Master Plan, and preparation of the Plan "with the maximum feasible public input." The waterfront land use plan must be reviewed at least once every five years.[5]

Until the Plan is approved, the ordinance prohibits "any action to permit the new development of any non-maritime land use" (except those listed above). However, the City Attorney has opined, based on the reasoning of a Superior Court decision, that the Port Commission is not subject to this prohibition.[6,7] Existing non-maritime land uses or uses that had all necessary permits as of January 1990 are exempt from this moratorium. Also exempt are restoration of the Ferry Building and renovation of the public boat launch (and construction of supporting retail uses) at Pier 52, both of which were exempted from the moratorium by the voters under Proposition P in November 1994. A March 1996 ballot initiative exempted a ball park and related uses at China Basin as well. If a new land use is proposed for a site on which there is currently an unacceptable land use, the new use must be either a maritime use or an acceptable non-maritime use. However, there is no requirement to abate existing "unacceptable" uses.[5]

E. STATUS OF THE DRAFT WATERFRONT LAND USE PLAN

To comply with the maximum feasible public input requirement of Proposition H, the Port Commission created a 27-member Waterfront Plan Advisory Board (Advisory Board), representing the public and specific waterfront stakeholders, appointed by the Mayor, Board of Supervisors and Port Commission. The Advisory Board developed a Draft WLUP through a three-phase, public planning process; the recommended Draft Plan was forwarded to the Port Commission in July 1994.

- During Phase I, the Advisory Board determined the long-term land use needs of all water-dependent activities that are or could be operating at the Port, and tentatively reserved Port properties for that purpose.
- During Phase II, the Advisory Board evaluated the feasibility and desirability of other activities, and identified possible land uses for the sites that had not been reserved exclusively for water-dependent development.
- During Phase III, the Advisory Board integrated the results of the first two phases of the process into the Draft WLUP that was presented to the Port Commission on July 26, 1994.

The Advisory Board held public meetings twice a month over the course of three years. In addition, subcommittees of the Advisory Board held meetings and Port staff held public workshops and sessions with community groups.

Port staff reviewed the Draft WLUP with respect to the Port's needs and responsibilities, and on the basis of that review, proposed revisions to the Plan. Those proposed revisions were incorporated into a Revised Draft Plan, published November 4, 1994, for Port Commission consideration and public review. After public hearings held by the Port Commission on November 21 and December 19, 1994, and by the Advisory Board on January 12, 1995, Port staff proposed additional revisions to the Draft WLUP.

At its meeting on January 24, 1995 the Port Commission authorized the preparation of an EIR on the Revised Draft Plan, as further revised at that meeting. Additional revisions may be made to the Plan, as a result of the EIR's conclusions and public and agency input. After completion and certification of the EIR, the Port Commission will consider adoption of the completed WLUP. (The EIR certification and Plan approval process is described in Section III.E., Project Description, Approval Process, pp. 69-70.)

NOTES - Background

1 The Project Area includes property located generally between Hyde Street Pier and India Basin that was transferred to the City and County of San Francisco pursuant to the Burton Act and other property acquired by the City and County through its Port Commission. The area covered by the Plan excludes privately owned parcels within the 1961 Port Jurisdiction Line and land subject to transfer to Catellus Development Corporation. The Project Area includes the land subject to transfer to the City and County from Catellus adjacent to Pier 80 (the "Western Pacific railyard" site) and an area presently owned by Caltrans adjacent to Pier 46B, as well as Port property south of India Basin near Candlestick Park. The Project Area includes the waterfront as defined by Proposition H. All commercial and industrial activities on Port-owned property are operated by firms who lease land and facilities from the Port. The Port also contracts with private firms to operate its maritime facilities, such as the container shipping terminal at Piers 94/96.

2 A comprehensive amendment of the San Francisco City Charter, passed by the voters in 1995 and effective July 1, 1996, changed the name of the San Francisco Master Plan to the General Plan.

3 Burton Act, California Statutes, Chapter 1333, 1968, Sections 3 and 4.

4 Lynch, Thomas C., Attorney General, and E. Clement Shute, Jr., Deputy, Opinion, [BCDC's authority to adopt a regulation allowing Bay fill for non-water-oriented uses], October 15, 1970.

5 From the text of Proposition H, which is reprinted in Appendix B of the Draft Waterfront Land Use Plan.

6 *Save San Francisco Bay Association v. San Francisco Bay Conservation and Development Commission, et al.*, Case No. 925-681, 925-620, Superior Court Transcript March 15, 1991.

7 Because the Port Commission is not a City agency that can be affected by a City voter initiative, the prohibition on permitting new non-maritime development does not apply to the Port in cases where only Port Commission approval (and not another City agency's approval) would be required.

III. PROJECT DESCRIPTION

A. PROJECT SPONSOR OBJECTIVES

Per its stated mission, the Port of San Francisco is a public enterprise committed to promoting a balance of maritime-related commerce, fishing, recreational, industrial, public access and commercial activities on a self-supporting basis through appropriate management and development of its resources for the benefit of the public. The Port will achieve this commitment by accomplishing a series of specific objectives outlined in its Strategic Plan. Implementation of the Waterfront Land Use Plan (WLUP) is intended to facilitate certain key objectives of the Strategic Plan, including the following:

> Support and enhance a diversity of maritime industries: Actions to implement this objective include promoting use of container facilities; increasing cruise ship calls and improving cruise ship facilities; increasing fishing berths, modernizing commercial and sport fishing facilities and providing key support services to fishermen; expanding berthing facilities for ferries, taxis and water-based transit; actively marketing ship repair operations; and providing more recreational boating opportunities.
>
> Attract residents and visitors to the waterfront: This may be achieved by promoting special events on the property; integrating existing public access areas with new access areas, including implementation of a "PortWalk" along the waterfront; and developing new uses that generate revenues that provide subsidies for public access and maritime activities.
>
> Earn sufficient revenue to remain self-supporting and to fund improvements, maintenance and prudent reserves: The Port relies upon its ability to generate revenue from property under its stewardship to fund operations, maintenance and public improvements; it does not receive subsidy from the City. Approval of the WLUP and related amendments to State and local plans and policies is intended to forge a consensus among the citizens of San Francisco and government agencies with jurisdiction over Port property. The resulting body of land use policy is intended to permit implementation of a mix of maritime and non-maritime uses, some of which are expected to generate revenues sufficient to fund other uses that are desired, but require subsidy.

Implementation of the WLUP will enable the Port to meet one of the requirements of the Burton Act which requires that "on or before August 14, 2003, the lands transferred pursuant to this act shall be substantially improved by the city and county without expense to the state." If the Department of Finance determines that San Francisco has failed to improve the lands as required, the property will revert to the State of California.

Implementation of the WLUP is also intended to achieve the seven goals described in Chapter 2 of the Waterfront Plan, institute new land use policies described in Chapter 3, and achieve key objectives and development standards for each subarea of the Waterfront described in Chapter 4.

Implementation of the Plan is also intended to result in the incorporation of the Plan's policies and objectives into the larger regulatory framework that governs Waterfront land use and result in the institution of a streamlined site-specific development process, as described in Chapter 5. The Port will propose that the policies and objectives of the Plan be incorporated into the City's General (Master) Plan and the City Planning Code through conforming amendments, subject to the consideration and approval of the Planning Commission. Likewise, conforming amendments to San Francisco Bay Conservation and Development Commission (BCDC) plans and policies will be proposed so that the land use policy documents of the Port, the Planning Commission and BCDC provide consistent guidance for use and development of Port property. Achieving consistency with the policies of agencies with some jurisdiction over the waterfront in this manner is intended to result in a new, streamlined approach to site-specific development.

B. WATERFRONT LAND USE PLAN

INTRODUCTION TO THE PLAN

The Draft WLUP includes a Prologue, an Executive Summary, five chapters outlining Plan goals, objectives and policies, and four appendices. Please refer to the Draft WLUP dated January 24, 1995, for a detailed review of the Port's proposed policies. A copy of the Draft Plan can be obtained from the Port of San Francisco offices at the Ferry Building, The Embarcadero at Market Street. The Plan is also available for review at the San Francisco Main Public Library in the Civic Center.

The following brief summary of the Plan is intended to provide the reader of the EIR with an "orientation-level" understanding of the Plan sufficient for the reader to comprehend the EIR's analysis and information.

Chapter 1 of the Draft Plan is an Introduction to the Port, portions of which are condensed in Section II.C., Background, Brief History of the Port, and which is supplemented by Plan Appendix A, containing additional detail regarding maritime activities.

Chapter 2 outlines the goals of the Plan. The Plan's overarching goal is "reuniting the City with its waterfront" through implementation of the Plan.

Chapter 3 sets forth the Plan's General Land Use Policies. This chapter generally describes the acceptable uses contained in the Plan and general policies that apply to all sites on which those uses would be permitted on a long-term and interim basis (other policies affecting only specific sites are provided in Chapter 4, summarized below). Chapter 3 also explicitly identifies non-maritime land uses that would be unacceptable within 100 feet of the shoreline, pursuant to criteria identified in Proposition H. The Plan provides for seven categories of acceptable land uses: Maritime Uses, Transitional Maritime Sites, Open Space and Public Access, Residential Uses, Commercial Uses, Other Uses, and Interim Uses.

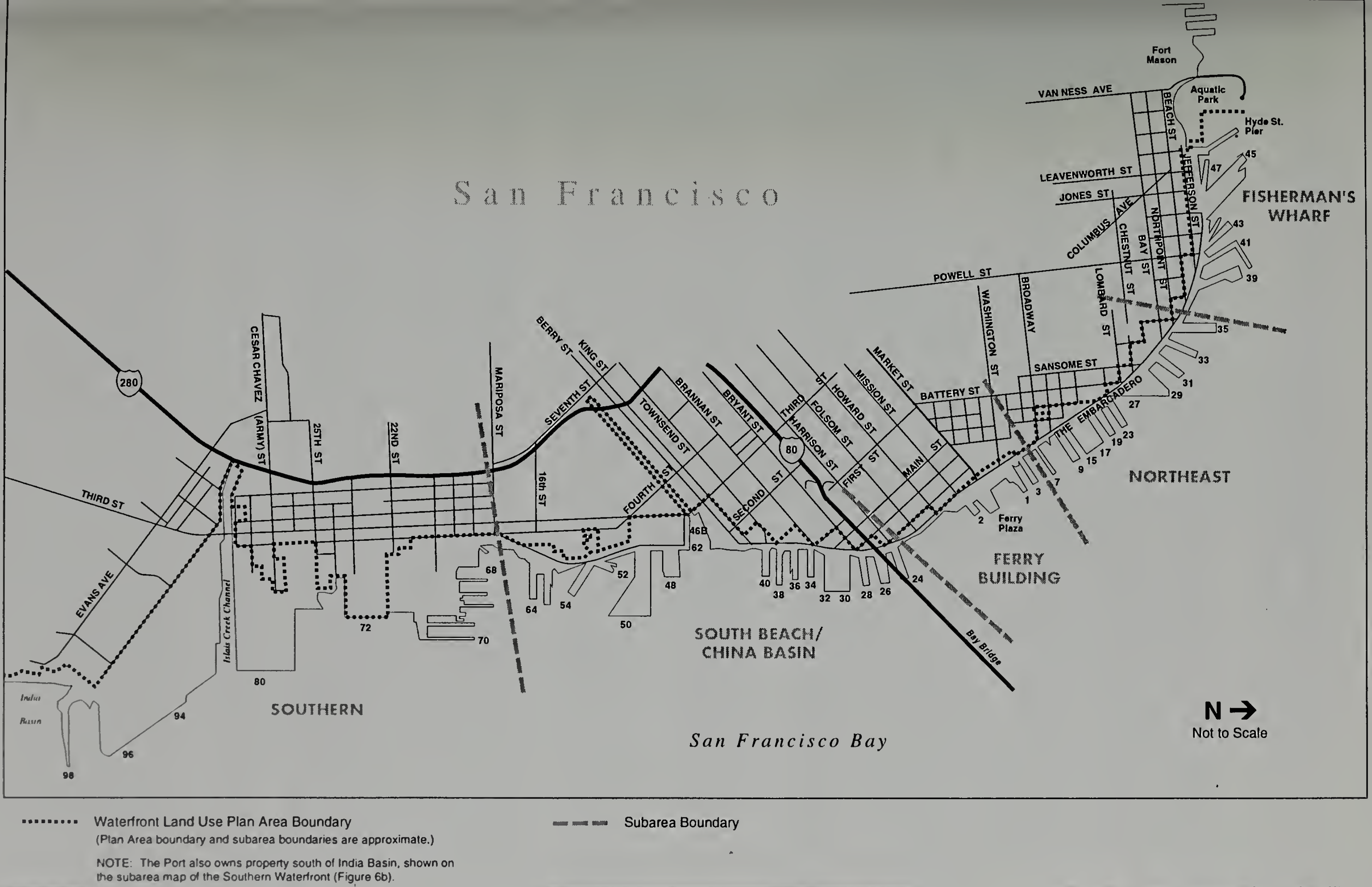
Chapter 4 describes Plan objectives for the five geographical subareas of the WLUP Project Area (see the next subsection of this chapter for a description of the subareas) and "Standards for New Development" for specific sites within each subarea.

Chapter 5 discusses implementation of the WLUP. The chapter provides an overview of legislative and regulatory issues associated with the land uses proposed in the Plan, implementation objectives and an outline for a streamlined entitlement process, and financial implications of the Plan.

PLAN SUBAREAS

The WLUP divides the Project Area into five subareas, each of which includes both piers and seawall lots. Figure 1, p. 13, shows the Project Area and subareas. The subareas and their boundaries are:

- Fisherman's Wharf - Just west of Hyde Street Pier to Pier 35½ (inclusive) (see Figure 2, p. 24)
- Northeast Waterfront - Pier 35 to Pier 7 (see Figure 3, p. 26)
- Ferry Building - Pier 5 to Embarcadero Promenade south of the Ferry Building (see Figure 4, p. 28)
- South Beach/China Basin - Pier 22½ to Mariposa Street (Pier 66) (see Figures 5a and 5b, pp. 30-31)
- Southern Waterfront - Piers 68-70 to India Basin (see Figures 6a and 6b, pp. 34-35)



SOURCE. Environmental Science Associates

San Francisco Waterfront Land Use Plan EIR ■

Figure 1
Waterfront Land Use Plan:
Project Area and Subareas

For purposes of discussion, the South Beach/China Basin subarea is further subdivided into portions of the subarea north and south of China Basin Channel.

Existing land uses within each subarea include (among others) the following:

- Fisherman's Wharf - Aquatic Park, Hyde Street Pier, fishing industry (fishing boats, fish processing), historic ships, restaurants, retail, open space and public access, excursion boat operations, and the Pier 39 mixed-use complex;
- Northeast Waterfront - cruise terminal, excursion boat operations, office, cargo shipping, open space and public access, Foreign Trade Zone, warehouse, restaurants, and surface parking lots;
- Ferry Building - historic ships, office, parking, commuter ferry operations, restaurants, and open space and public access, including the Promenade;
- South Beach/China Basin - fireboats, office, restaurants, residential, open space and public access, yacht club, South Beach Harbor, Port maintenance facilities (north of China Basin Channel), and ship repair, cargo shipping, bus parking, public boat launch and recreational boating, tug and tow and other maritime support services, and restaurants (south of the Channel); and
- Southern Waterfront - ship repair, unoccupied historic buildings, container shipping terminals, storage, general industrial, grain terminals, tallow pipeline and rendering plant, concrete storage, soil remediation, and wetlands and open space.

Existing land uses adjacent to and near the Project Area vary considerably by subarea, and are similar to some extent to the types of existing land uses within each subarea. Uses adjacent to each subarea include the following:

- Near the Fisherman's Wharf subarea - specialty and visitor retail and other tourist-serving uses, as well as low-income and market-rate housing;
- Near the Northeast Waterfront subarea - small- and medium-scale office, urban mixed use residential, and multi-unit residential;
- Near the Ferry Building subarea - high-rise office, restaurants and hotels, and open space;
- Near the South Beach/China Basin subarea - residential, parking, vacant open land, and some industrial uses; and
- Near the Southern Waterfront subarea - industrial uses, with some small low-density residential and mixed-use residential enclaves.

Please refer to Section IV.B., Environmental Setting, Land Use and Zoning, pp. 110-161, for a more complete description of existing land uses in and near the Project Area.

GOALS AND KEY POLICIES OF THE WATERFRONT LAND USE PLAN

Goals

As noted previously, the Plan's overarching goal is "reuniting the City with its waterfront" through implementation of the Plan. The seven goals by which the Plan seeks to accomplish this primary goal are:

- **A Working Waterfront:** Port lands should continue to be reserved to meet the current and future needs of cargo shipping, fishing, cruises, ship repair, ferries and excursion boats, recreational boating and other water-dependent activities.
- **A Revitalized Port:** New investment should stimulate the revitalization of the waterfront, providing new jobs, revenues, public amenities and other benefits to the Port, the City and the State and should seek to reflect the City's ethnic and gender diversity in Port business opportunities.
- **A Diversity of Activities and People:** Port lands should host a diverse and exciting array of maritime, commercial, entertainment, civic, open space, recreation and other waterfront activities for all San Franciscans and visitors to enjoy.
- **Access Along the Waterfront:** A network of parks, plaza, walkways, open spaces and integrated transportation improvements should improve access to, and enhance the enjoyment and appreciation of, the Bay environment.
- **An Evolving Waterfront Mindful of Its Past and Future:** Improvements should respect and enhance the waterfront's historic character, while also creating new opportunities for San Franciscans to integrate Port activities into their daily lives.
- **Urban Design Worthy of the Waterfront's Setting:** The design of new developments should be of exemplary quality and should highlight visual and physical access to and from the Bay, while respecting the waterfront's rich historic context and the character of neighboring development.
- **Economic Access That Reflects the Diversity of San Francisco:** The economic opportunities created by commercial uses should be made accessible to persons of both sexes and from a representative variety of ethnic and cultural backgrounds so that those persons receiving these economic opportunities represent the diversity of the City of San Francisco.

Land Use Policies

The following discussion summarizes the description of the land use categories and the applicable general policies. Not every use is designated by the Plan as acceptable in every location. More specific policies regarding each of the Plan's geographical subareas are discussed under The Range of Acceptable Land Uses by Plan Subarea, p. 22. Information on the relationship of the policies in the WLUP to policies of other regulatory agencies can be found in Section V.A., Environmental Impacts, Public Plans, Policies, and Regulatory Agencies: Comparison, pp. 364-395.

Maritime Uses

Maritime Uses include all "water-dependent" uses and their support/ancillary activities. These uses include, but are not necessarily limited to, cargo shipping; ship repair; commercial fishing (including sport fishing), fish handling and fish processing; recreational boating and water use; ferry and excursion boats and water taxis; cruise ship facilities; historic ships; maritime support services (including, for example, tugboats, bar pilots, ship chandlers, associated parking/maintenance, storage, Foreign Trade Zone, and Port maintenance); temporary and ceremonial berthing; and maritime office (including administrative functions for any maritime industry or offices that provide services and supplies to maritime operations).

Plan policies generally call for protecting and, where feasible, enhancing and expanding facilities for maritime uses. In general, the Port's industrial cargo and ship repair operations are concentrated in the South Beach/China Basin subarea (south of China Basin Channel) and in the southern waterfront in the area from Piers 48 through 96. New cargo shipping and ship repair are to be directed to Maritime Expansion Areas south of China Basin, and truck access to those Maritime Expansion Areas is to be preserved.

Most of the Port's existing commercial- and recreation-oriented maritime uses, such as ferries and excursion boats, the cruise ship terminal, historic ships, and recreational boating, are located north of China Basin Channel. North of China Basin, new maritime activities are primarily to focus on commercial- and recreation-oriented uses such as ferries, water taxis, excursion and cruise ships, and historic ships. An exception is fishing, an industrial maritime use encouraged for continuation and expansion at Fisherman's Wharf. Public access, recreational boating and water uses, and accessory commercial services (such as retail convenience sales and limited restaurant/food sales) are to be permitted where compatible with maritime uses. The Plan also would accommodate seasonal overflow demand for fish-handling and temporary and ceremonial berthing at any pier that can safely meet those needs.

Transitional Maritime Sites

The Plan identifies Transitional Maritime Areas in the northeast waterfront at Piers 15-17, Piers 19-23, and Piers 27-29. These are areas currently occupied by cargo-related facilities (newsprint shipping and cargo warehousing) that are not expected to remain over the long term because of the transition of inland properties from industrial to residential and commercial uses, the transformation of The Embarcadero to an urban boulevard, trends in the shipping industry, and restrictions on dredging, the latter two factors resulting in increasing consolidation of cargo activities, which can best be accommodated in the Port's southern waterfront. Nevertheless, Plan policies call for these areas to remain in maritime use for as long as feasible, and establish criteria to be considered by the Port Commission before they could be permanently converted to non-cargo facilities.

Open Space and Public Access

Until recently, the industrial maritime focus of the Port precluded the development of substantial public access improvements along the San Francisco waterfront. However, the same forces that have resulted in a decline in shipping and related activity at the Port have provided opportunities for development of a publicly accessible shoreline at several locations, including the Embarcadero Promenade, between the Ferry Building and Bay Bridge; at Fisherman's Wharf, Pier 39; and at the Pier 7 fishing and open space pier, completed in 1990. Volunteer restoration efforts are currently improving the south bank of Islais Creek with landscaping and public access improvements. Other open space is either not fully improved and therefore underused, such as Ferry Plaza, Warm Water Cove and Pier 98, or not developed because of the unavailability of funding, such as proposed Rincon Point and (phase two of) South Beach Parks and a planned wetland-open space project in the Mission Bay project area.

Plan policies call for a diverse array of waterfront open space and publicly accessible areas for passive and active use, environmental protection, and education, with improved facilities such as restrooms where feasible. The Plan promotes a "PortWalk" north of China Basin that would link the Bay, the new pedestrian improvements under construction with the Waterfront Transportation projects along The Embarcadero, and the regional Bay Trail, as well as new public access on piers where feasible as major new activities occur. To develop new open space and public access areas, the Plan calls for the Port to continue to pursue government and private funding, encourage volunteer support, and also to link development of such spaces with revenue-generating commercial development, and to allow limited commercial activity, such as food stands and bicycle rental stands, to serve users of open spaces. Urban design guidelines would attempt to "facilitate integration of New Open Spaces and Public Access with the design and function of other waterfront activities."

Residential Uses

While not permitted on piers, residential development may be allowed on inland seawall lots (at least 100 feet from the shoreline) that are declared surplus to maritime needs. Like open space, residential uses were incompatible with historic industrial Port uses, but have been developed in recent years in the South Beach area as the uses of the Port have changed and as those areas have been determined by the State Lands Commission to be surplus to the public trust. (South Beach residential uses include low- and moderate-income housing, and the Delancey Street Foundation rehabilitation program.) Other residential development has occurred adjacent to Port lands in the (broader) northeast waterfront area.

The Plan calls for the development of new residential units on a limited number of surplus seawall lots. Policies in the Plan would result in the inclusion of accessory commercial activities and community meeting facilities. Plan policies also specify compliance with City policies regarding provision of affordable housing, and seek residential development that would generate income to support other Port activities. Design guidelines to be developed after adoption of the Plan will address public landscaping, and would attempt to ensure that residential development is at an appropriate scale.

Commercial Uses

The Draft WLUP proposes development of new commercial uses generally as part of "Mixed Use Opportunity Areas," which are combinations of piers and seawall lots that are anticipated to be occupied by a mix of different land uses and that would be expected to bring both daytime and nighttime activity to the waterfront to help re-integrate the Port with the rest of the City. The Plan envisions that the development of new water-oriented commercial uses within mixed-use developments on piers and waterside sites north of China Basin would provide opportunities to establish a "PortWalk" extending public access walkways onto piers, through different activities, connecting back to the pedestrian promenade improvements currently under construction along The Embarcadero. A Mixed Use Opportunity Area might comprise maritime, commercial, public access and open space uses like those at Fisherman's Wharf, or maritime, residential and commercial uses, like those at South Beach. The Plan identifies Mixed Use

Opportunity Areas in all five subareas. This discussion concerns general Commercial Use policies only; for description of specific Mixed Use Opportunity Areas, please see The Range of Acceptable Land Uses by Plan Subarea, p. 22.

The Plan distinguishes between commercial uses on piers and other "waterside" sites and commercial uses on seawall lots. Water-oriented commercial uses on piers could include artist studio/gallery; assembly and entertainment facility, including conference facility, theater, club, amusement park, exhibition hall, public market, and children's entertainment; recreational enterprise, including facilities offering recreational and athletic fitness services; museum; parking (accessory to an allowed use); retail, including shops and eating and drinking places; visitor centers; warehousing/storage (excluding mini-storage facilities); wholesale trade/promotion center; and general office (in pierhead or bulkhead buildings). Acceptable commercial uses on seawall lots would include the above, plus hotel, general office (on seawall lots declared surplus to maritime needs), parking (accessory and general), and warehousing/storage (including mini-storage).

Plan policies assume that commercial uses present the greatest opportunity for revenue generation in the future, and that commercial uses are therefore essential to the financing of certain improvements such as rehabilitation of deteriorated piers, maritime-related facilities and other infrastructure and creation of open space/public access improvements, as well as maintenance of existing facilities. The Plan would foster mixed use development at certain locations oriented around maritime activities in which open space/public access could either be built by developers or financed by the revenue generated by water-oriented commercial uses. Transit use would be promoted; parking would be permitted on piers (as an accessory use) if there were no suitable upland location. Design guidelines and historic preservation guidelines would be developed to include and expand upon stated design objectives for mixed use developments, including (1) coordinated building designs, particularly for projects that include more than one site; (2) coordinated landscaping and public access improvements; (3) designs or design treatments that protect views of the Bay; (4) locations from which to view the City from the water; and (5) building designs which protect open spaces from shadows and wind impacts from adjacent development, according to applicable law. Policies on commercial uses also would seek to extend business opportunities to women- and minority-owned businesses and would prohibit new private clubs with exclusive membership policies.

Other Uses

Academic institutions would be allowed on a few sites to provide educational opportunities, such as short courses and workshops, to the general public; such institutions would require preparation of a campus plan addressing public access and transportation prior to development. Unless these institutions were related to marine research or other public trust purposes, they would only be permitted on surplus lands, as temporary uses, or incidental to a public trust purpose.

Transportation services (land-based, waterborne, and intermodal), such as bus, taxi, and automobile loading areas, ferry ticket sales and information booths, and pedicab/carriage staging, are designated as acceptable uses primarily in the Ferry Building subarea; Plan policies require that they minimize street congestion and provide the most attractive facilities feasible. Ticket sales for multiple transportation providers would be encouraged at a single location.

Community facilities, such as fire and police stations, post offices, day care, health care, libraries, meeting rooms, and emergency medical helipads, would be strategically located and, where feasible, would be combined at one or more locations.

The Plan also addresses potential development of a sports facility in the South Beach/China Basin subarea and a power plant in the Southern Waterfront subarea. In lieu of general land use policies, the Plan presents site-specific Development Standards for those uses (under the specific policies for each subarea, as described on pp. 33-37).

Interim Uses

Given that major improvements and developments would occur incrementally and the expectation that it will be many years before hundreds of acres reserved for maritime use might be needed in the Southern Waterfront subarea, the Plan provides general policies for interim uses, stating that potential revenue generated by such uses could help finance longer-term improvements and thus further implementation of the WLUP. In particular, short-term interim uses, including many existing uses, are envisioned by the Plan as potentially providing the greatest use of Port facilities pending potential changes in the regulatory environment that could be required for implementation of certain features of the Plan. Such interim uses would not necessarily be those that the WLUP designates as acceptable on a permanent basis for a particular area or site, but could be removed, by condemnation if necessary, when conditions were such that the desired long-term use for a site became feasible.

North of China Basin Channel and within the 100-foot band of BCDC jurisdiction along the Bay shore, interim uses within existing buildings generally would be allowable for lease terms of five years, with one five-year renewal period, provided no major repairs to the facility or substructure are necessary to permit the uses to occur, and the uses do not significantly contradict the overall objectives of the WLUP. In exceptional cases, longer lease terms could be approved after a public review process. Examples of such interim uses include small business incubator industries, academic institutions, community facilities, parking or warehousing. The list of principal permitted uses in a C-2 district would be reviewed and prohibitions or restrictions would be placed on those uses that would be a threat to the environment or would result in certain environmental impacts. The Plan would encourage BCDC to adopt policies that recognize that interim uses cannot necessarily support the same level of public access improvements as permanent uses. Similar interim uses, as well as outdoor parking lots, would be permitted on seawall lots more than 100 feet inland, north of China Basin Channel, with the potential for more than one five-year lease extension. On these seawall lots, principal uses permitted in San Francisco under the City's C-2 (Community Business) Zoning District, such as retail, restaurants, and other commercial activities, would be approved through a streamlined permitting process.

South of China Basin Channel and within the BCDC/MTC *Seaport Plan* area, interim uses would be permitted that were not necessarily maritime-related, generally for 1 to 10 years, with potential exceptions for terms up to 30 years, to maximize productive economic use of land in the Project Area. Implementation of this feature of the Plan would require amendment of the *Seaport Plan* to permit interim uses in excess of five years in "port priority" areas.

Unacceptable Non-Maritime Land Uses

In addition to the seven categories of acceptable land uses, the Draft WLUP designates certain uses as unacceptable on piers or within 100 feet of the shoreline. These include

- Non-maritime private clubs;
- Residential uses;
- Sports facilities seating more than 22,000[1];
- Non-accessory parking;
- Adult entertainment;
- Non-marine animal services;

- Mortuaries;
- Heliports (except for emergency/medical services);
- Oil refineries;
- Mini-storage warehouses; and
- Hotels (already prohibited by Proposition H).

Height and Bulk Restrictions

The Draft WLUP does not call for specific changes in the existing height and bulk provisions of the San Francisco Planning Code. The Plan promotes low-scale development along most of the Waterfront, consistent with existing San Francisco zoning, which imposes a 40-foot height limit on most piers and seawall lots, with higher limits between Broadway and Harrison Streets (see Section IV.B., Environmental Setting, Land Use and Zoning, pp. 110-161, for details). The WLUP allows for an arena at China Basin that would require a change in the height limit (see the discussion of Variant 1 in Chapter VII, Variants to the Alternatives, beginning on p. 672).

THE RANGE OF ACCEPTABLE LAND USES BY PLAN SUBAREA

The Draft WLUP articulates specific objectives for each subarea of the waterfront and identifies a range of acceptable land uses for each site (pier or seawall lot) within the subareas. Generally, the Plan does not prescribe a specific land use for each individual site; rather, for each subarea, a matrix identifies a range of acceptable uses that would help attain the objectives for that subarea. Necessarily, certain major land uses, such as a passenger cruise ship terminal or cargo shipping terminal, could feasibly operate at only a limited number of locations on the waterfront, and the land use matrices reflect the relatively narrow range of sites for such uses by identifying them as acceptable uses at fewer locations than less site-constrained uses. Other uses, such as retail or restaurant commercial, water taxi service, historic ships, temporary or ceremonial berthing, maritime support facilities, or public access, could more readily operate at a greater number of sites, and the matrices reflect this by identifying such uses as acceptable at more locations.

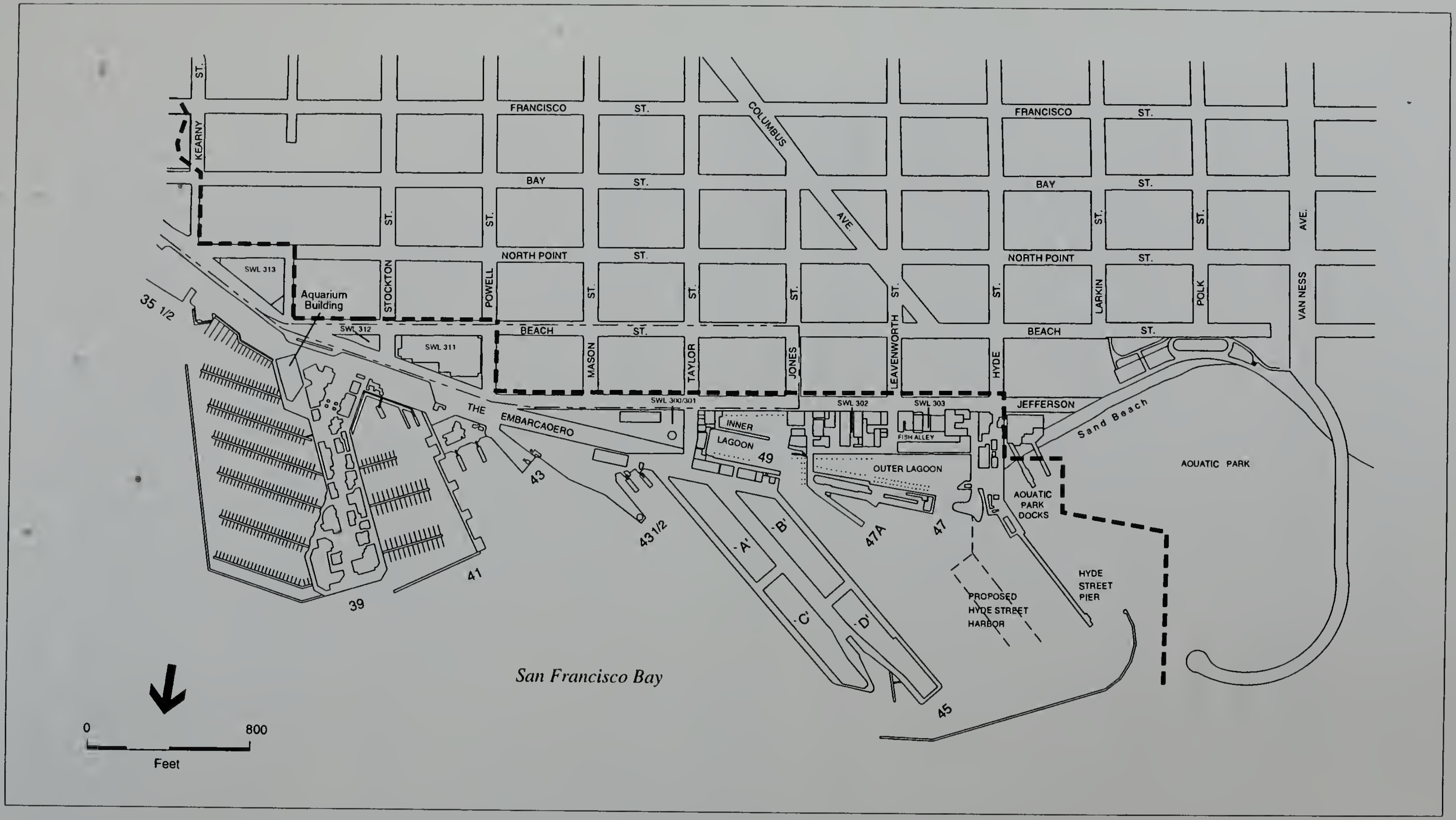
A summary of the range of acceptable land uses that would be permitted in each subarea is presented here, along with a description of Mixed Use Opportunity Areas that would be designated to undergo new development in each subarea. Important individual acceptable land uses are also identified. The complete matrix of acceptable land uses for each subarea and definitions of each of the land use types in the matrix are included in Appendix C of this document. Please refer to the WLUP for the objectives and development standards for each subarea.

Fisherman's Wharf

Figure 2 shows the Fisherman's Wharf subarea. Plan objectives for this area place priority on the restoration and expansion of the fishing industry, including commercial and sport fishing, and fish handling and distribution. The Plan also presumes a need to "attract [lease- and tax-] revenue-generating new uses to help support and subsidize the fishing industry and public activities," and it therefore emphasizes the importance of the Port's fish-handling modernization improvements at Pier 45 (to help "ensure the continued presence and improved health of the fishing industry") and the plans for fishing boat berths in a new Hyde Street Harbor, which could be complemented with a Fisheries Center and compatible retail activities to enhance public access. The Plan encourages provision of space for current and future needs of other Wharf-area maritime activities (historic ships, ferries and excursions, etc.) The Plan allows interim non-maritime uses in under-utilized facilities in Fish Alley (Seawall Lot 303) until there is sufficient fishing industry demand for these facilities. The Plan encourages the continuation of the Wharf's "eclectic mix of fishing industry and other maritime and visitor-serving uses" at the Wharf, while also encouraging new activities such as arts, education, historical and recreational facilities and places for public assembly to increase the area's appeal to local residents. The Plan also calls for efficiently planned parking and loading facilities coordinated with a "rationalized and enhanced" public access and open space program.

Key land use options specified for the Fisherman's Wharf subarea include the proposed Fisheries Center; continuation of the Hyde Street Pier historic ship museum; visiting ceremonial ships; ferries and excursion boats; retail; maritime offices; and new public assembly and entertainment opportunities. The Plan identifies a Fisherman's Wharf Mixed Use Opportunity Area that would include Seawall Lot 302, Fish Alley, Piers 49, 47, 45 (east side), and 43½, and Seawall Lot 301 (the so-called "Triangle" at the foot of Mason Street now occupied primarily by a surface parking lot and pedicab operations). The Plan includes development standards that would allow consideration of limited commercial uses at Pier 43½ and the Triangle to provide incentives to introduce open space and public access to and remove parking from those sites. For other acceptable land uses, please see the land use matrix for the Fisherman's Wharf subarea in Appendix C of this document.

Among the existing land uses that would be consistent with the Plan are commercial and sport fishing, the Hyde Street Pier historic ships (both noted above), ferries and excursion boats at Piers 39, 43, and 43½, existing restaurants and retail establishments and the Pier 39 retail entertainment complex, including public access to the Bay.



San Francisco Municipal Railway (MUNI) F-Line: An extension of the F-Line from Market Street north to Fisherman's Wharf, featuring the City's historic streetcar collection.

Waterfront Plan Project Area Boundary

SWL Seawall Lot

SOURCE: SMWM, 1995

San Francisco Waterfront Plan EIR ■

Figure 2

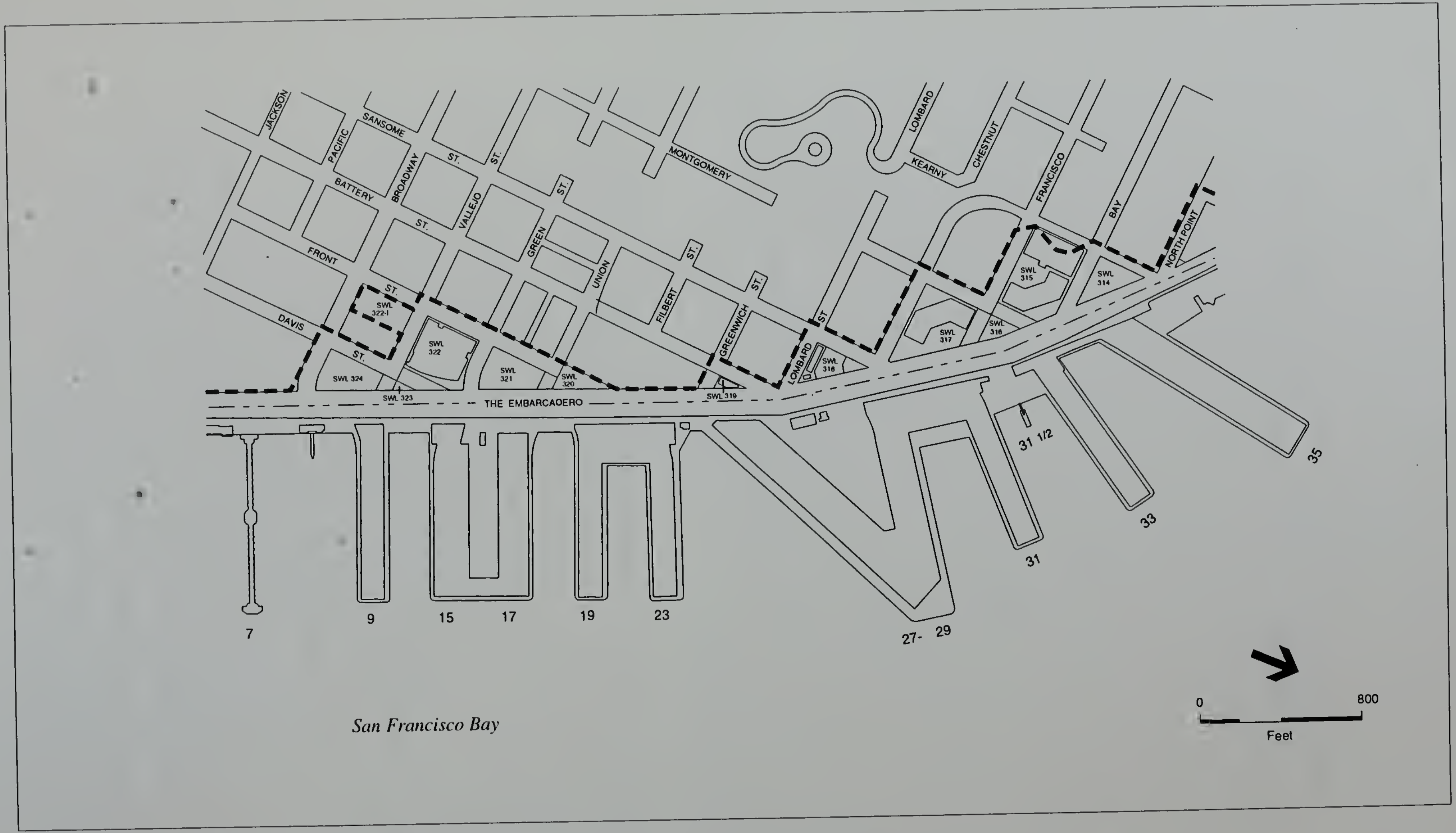
Fisherman's Wharf Subarea

Northeast Waterfront

Figure 3 shows the Northeast Waterfront subarea. Plan objectives call for maximizing opportunities for retaining maritime operations, thereby protecting existing cargo-related operations in the Transitional Maritime Area that includes Piers 15-17, Piers 19-23, and Piers 27-29, while providing for the eventuality that these cargo-related activities may relocate to the southern waterfront. The Plan states that, if and when those cargo-related activities leave the Northeast Waterfront, they should be replaced with a mix of maritime activities (such as recreation and excursion boats and historic ships) and commercial activities that maximize public appreciation and enjoyment of the Bay. The Plan also calls for the introduction of land uses that will bring both daytime and nighttime activity to the Northeast Waterfront, helping link the shoreline to the existing residential and commercial activities that have developed in the adjacent inland neighborhoods. Other objectives would protect and enhance the historic maritime character of the area (including the City's existing Northeast Waterfront Historic District that includes five Port seawall lots), encourage new development to highlight the area's status as a gateway to North Beach, Chinatown and Fisherman's Wharf, and provide public access amenities. The conceptually proposed PortWalk could offer a continuous pedestrian pathway on redeveloped piers and along the water side of The Embarcadero, providing new public access improvements along the Bay.

The Plan identifies a Bay Street Mixed Use Opportunity Area, including Piers 35, 33, and 31 and Seawall Lot 314 that could include an improved passenger ship cruise terminal and hotel (on Seawall Lot 314) , public entertainment and assembly, excursion boats/water taxis, historic ships, and/or ceremonial berthing. A Broadway Pier Mixed Use Opportunity Area, including Pier 9 and Seawall Lots 321, 322-I, 323, and 324, is identified as among the Port's most valuable land holdings and identified as a strong potential source of revenue. This area could include, for example, a sailing center, hotel, retail and restaurant commercial, residential use, offices, open space, and/or parking. For other acceptable land uses, please see the land use matrix for the Northeast Waterfront subarea in Appendix C of this document.

Among the existing land uses that would be consistent with the Plan are office development on seawall lots (including the landmark Roundhouse building), restaurants on Pier 23 and Seawall Lot 319, excursion boats at Pier 31½, the San Francisco Bar Pilots at Pier 9, and the public access Pier 7. As noted, the Port would retain a cruise terminal, now at Pier 35, although it could be relocated to a different subarea; the newsprint terminal, Foreign Trade Zone and cargo warehouse in the Piers 15-29 area would remain as long as feasible.



— - - — - San Francisco Municipal Railway (MUNI) F-Line: An extension of the F-Line from Market Street north to Fisherman's Wharf, featuring the City's historic streetcar collection.

▬ ▬ ▬ ▬ Waterfront Land Use Plan Area Boundary

SWL Seawall Lot

SOURCE: SMWM, 1995

San Francisco Waterfront Land Use Plan EIR ■

Figure 3

Northeast Waterfront Subarea

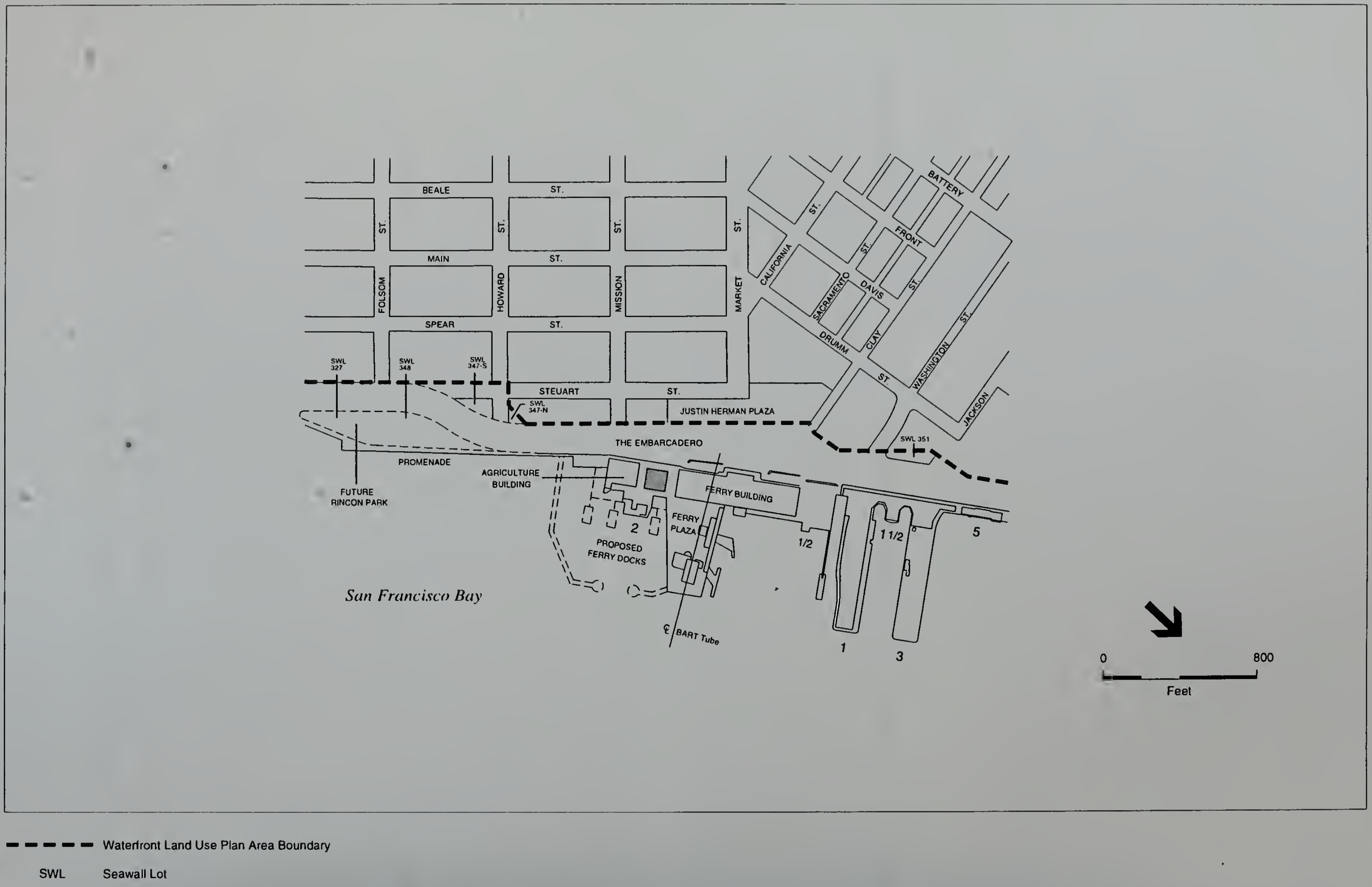
Ferry Building

Figure 4 shows the Ferry Building subarea. Plan objectives for the Ferry Building subarea call for preservation and restoration of historic structures, particularly the Ferry Building and the former U.S. Agriculture Building immediately to the south, both of which are listed on the National Register of Historic Places. Objectives support continued and enhanced maritime facilities to promote commute ferry service and recreational boating, and further encourage the restoration of the area as a major intermodal transit center. Because of the focus on reuse of historic structures and the desire to provide transit and meet other public objectives, a mix of public and private resources is anticipated to be required to realize the objectives for this subarea.

Plan objectives would provide that the Ferry Building and its environs be physically and visually integrated with the City and the Bay, including extension of the proposed PortWalk through this subarea to provide integrated pedestrian access. Efficiently planned parking and loading facilities are deemed essential to the feasibility of access to existing and new development. The mix of uses is intended to emphasize the civic importance of the area, generate waterfront activity and serve San Francisco residents and visitors alike.

Much of this subarea is encompassed by the Ferry Building Mixed Use Opportunity Area, including the Ferry Building and the area in front of it, Ferry Plaza and Agriculture Building, Seawall Lot 351, the Pier 5 bulkhead building, and Piers ½, 1, 1½ and 3. A smaller Steuart Street Mixed Use Opportunity Area includes Seawall Lots 347N and 347S on either side of Howard Street, along with Steuart Street south of Howard, which will be closed upon completion of the Embarcadero Roadway improvements. A proposed Rincon Park would occupy a trapezoidal piece of land within this area, between The Embarcadero and Steuart Street and between about Howard and Harrison Streets.

Both maritime and non-maritime land uses are foreseen by the Plan in and around the Ferry Building, but the mix of uses is likely to be similar to those currently in place. Existing uses that would remain and possibly be enhanced or expanded include ferry service at and near the Ferry Building, restaurants at Ferry Plaza, retail and offices in the Ferry Building, offices in the Agriculture Building, and public access along the Embarcadero Promenade. (Although office uses are expected to remain in the Ferry Building, the Port's own offices could be relocated elsewhere.)



SOURCE: SMWM, 1995

San Francisco Waterfront Land Use Plan EIR ■

Figure 4

Ferry Building Subarea

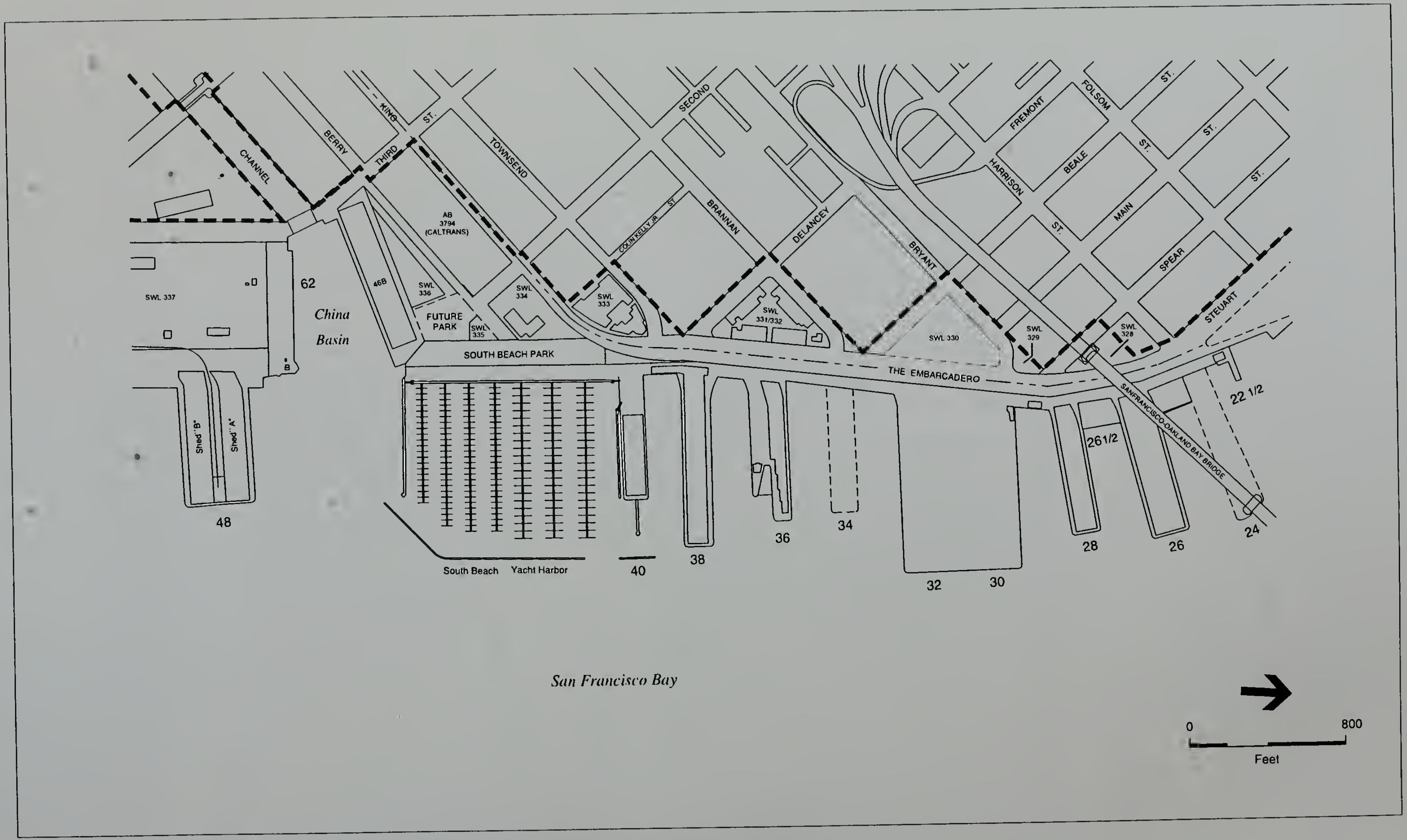
Major new land uses on the Ferry Building Waterfront could include waterborne transportation such as water taxi and hovercraft service and excursion boats, historic ship berthing, a visitor center, museums, and public assembly and entertainment facilities. For other acceptable land uses, please see the land use matrix for the Ferry Building subarea in Appendix C of this document.

South Beach/China Basin

Figures 5a and 5b show the South Beach/China Basin subarea. Plan objectives for this subarea -- which is divided into two distinct yet related pieces north and south of China Basin Channel -- would retain and consolidate existing industrial maritime activities, retain and expand existing commercial- and recreation-oriented maritime uses, and encourage ongoing and future redevelopment of the Rincon Hill, South Beach and Mission Bay neighborhoods. Objectives call for improving public access, including further expansion of the proposed PortWalk, and fostering a linkage to downtown and thereby to the rest of San Francisco and the Bay Area by improving transportation links and providing general-interest attractions that would also benefit the growing residential neighborhoods. The Plan also contains an objective that would encourage "a new architectural identity" north of China Basin Channel, including adapting existing pier bulkhead buildings to new uses where feasible.

Virtually the entire subarea north of China Basin Channel is divided into four Mixed Use Opportunity Areas: Rincon Pier, Bryant Street, South Beach Harbor, and China Basin. The Rincon Pier Mixed Use Opportunity Area (Piers 22½, 24, 26 and 28; Seawall Lot 328) would connect with he Ferry Building subarea through Rincon Park to the north and extend under the Bay Bridge. The Plan envisions entertainment and recreational activities that would draw visitors from the adjacent Ferry Building subarea through Rincon Park to Piers 26 and 28, south of the Bay Bridge. The condemned Pier 24 would be wholly or partially demolished and could potentially provide amenities for people using the park. Because plans for the Terminal Separator Structure (Bay Bridge ramps) and connections to the Embarcadero Roadway are not final, the Plan proposes interim uses on Piers 26 and 28 and encourages maintenance of existing maritime support uses there.

The Bryant Street Mixed Use Opportunity Area (Piers 30-32 and 34; Seawall Lot 330) includes the Port's largest potential development site, along with the condemned Pier 34, which would be



▬ ▬ ▬ Waterfront Land Use Plan Area Boundary

- - - - - Indicates condemned piers

— - - — (North of China Basin) San Francisco Municipal Railway (MUNI) Metro Extension: A surface extension of the MUNI Metro subway light rail from Market Street south to I-280 and along King Street to Sixth Street and beyond.

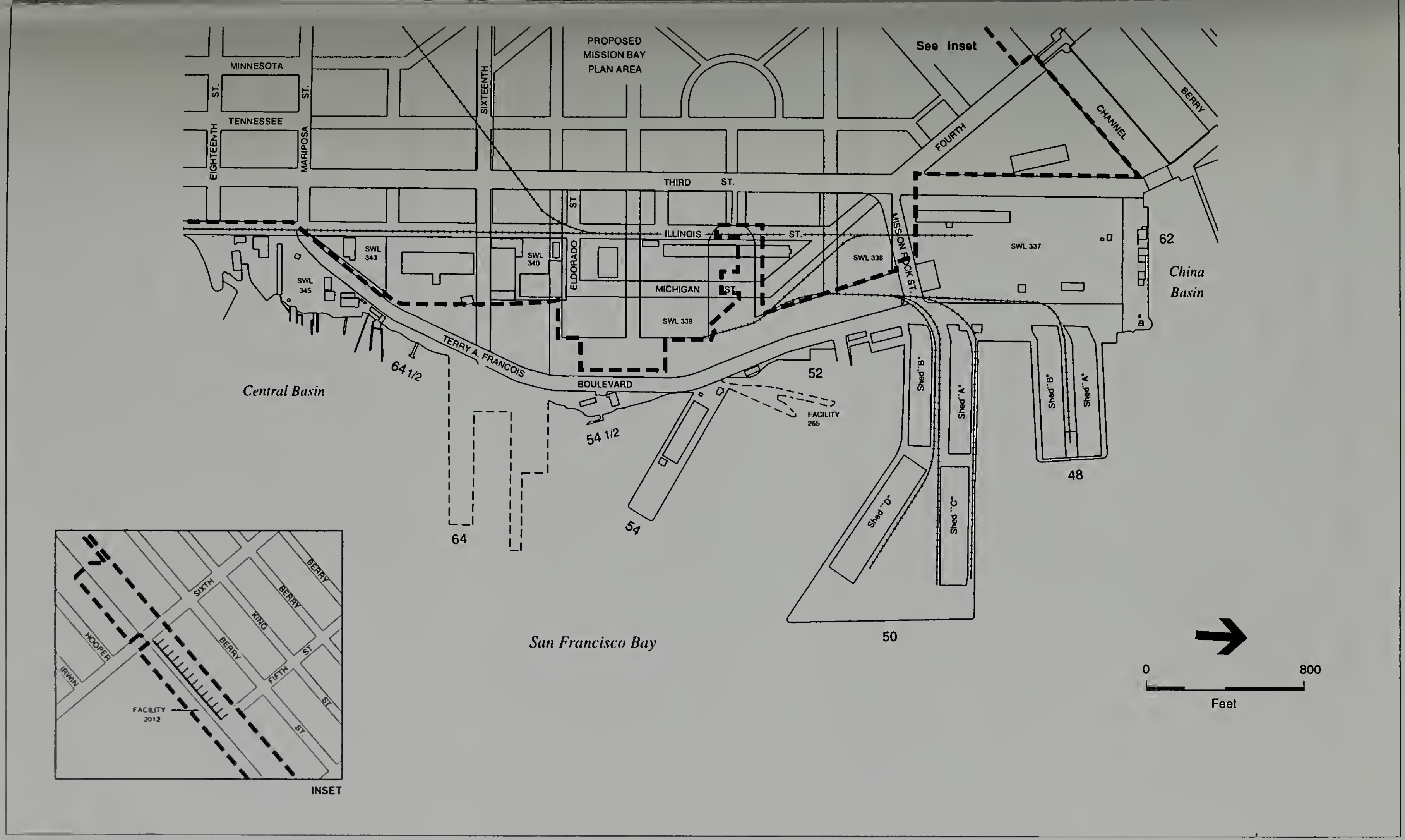
SWL Seawall Lot

SOURCE: SMWM, 1995

San Francisco Waterfront Land Use Plan EIR ■

Figure 5a

South Beach/China Basin Subarea



Waterfront Land Use Plan Area Boundary

Indicates condemned piers

SWL Seawall Lot

SOURCE: SMWM, 1995

San Francisco Waterfront Land Use Plan EIR ■

Figure 5b

South Beach/China Basin Subarea (Southern Portion) removed. The Plan notes a potential for dramatic, high-quality architectural development, multi-faceted commercial development and public access at the Piers 30-32 site that incorporates water-taxis, excursion boat operations and/or berthing of historical ships.

Piers 30-32 also is identified as a potential location of a new cruise terminal. The seawall lot could include parking and businesses that would support both new development and neighborhood residents.

The South Beach Harbor Mixed Use Opportunity Area (Piers 36, 38 and 40 and South Beach Harbor) has already undergone substantial recent development under the direction of the San Francisco Redevelopment Agency, which constructed the 700-berth harbor and related public access improvements in 1986. Pier 38 could include maritime support uses or be integrated with existing excursion and recreational boating facilities at Pier 40; Pier 36, which is in poor condition, could be demolished. A maritime recreational facility is currently planned for Pier 38, including storage, launching, and berthing of motor boats.

The China Basin Mixed Use Opportunity Area (Pier 46B; Seawall Lots 335 and 336; Assessor's Parcel 3794 [the so-called Caltrans site, not a Port-owned property]) is located at the mouth of China Basin Channel. The site is immediately adjacent to the South Beach Harbor and the proposed South Beach Park (due to the realignment of The Embarcadero). This Opportunity Area could be developed with residential or commercial uses, with Pier 46B continuing in maritime use. This area also has been proposed as the site of a possible ballpark for the San Francisco Giants (see the discussion of Variant 1 in Chapter VII, Variants to the Alternatives, beginning on p. 672).

In June 1994, the Advisory Board recommended to the Port Commission that "sports facilities with seating capacity greater than 22,000" be added to the unacceptable non-maritime land use list. The Draft WLUP states that "the decision whether to allow a ballpark . . . in this Opportunity Area should be postponed until . . . the public and affected regulatory agencies have had the opportunity to determine whether it is acceptable." The Plan includes a development standard which recognizes that, if a ballpark is deemed acceptable by the Port, the regulatory agencies, and San Francisco voters (in an election), the existing height limit would need to be amended to accommodate the structure, and the development project must include "site design, public access improvements and architectural treatments which are oriented to the Bay" and a transportation plan (to minimize parking requirements).[2] On March 26, 1996, San Francisco voters approved amendment of the City Planning Code and Zoning Map to create a Northeast

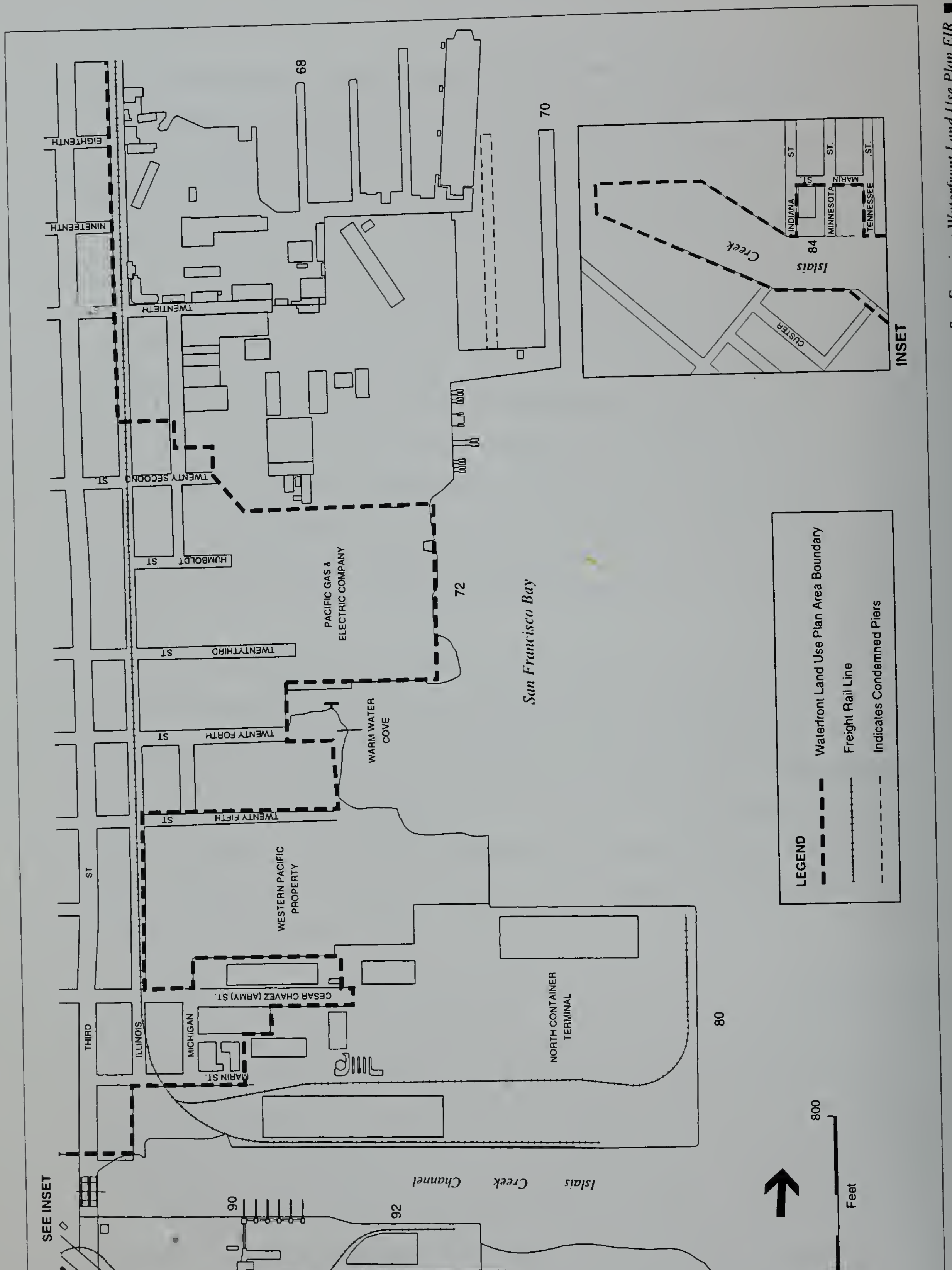
China Basin Special Use District bounded by King Street, Second Street, China Basin Channel and Third Street. The Special Use District permits a ballpark with a maximum capacity of 45,000 and assembly and entertainment and supporting uses at that location, subject to conditional use authorization by the City Planning Commission. The Zoning Map is amended to change the height limit for the District from 40 feet to 150 feet.

South of China Basin Channel, the Plan calls for existing ship repair and maritime support (warehouse and tug & tow) activities to remain. For the remainder of the subarea, the Mission Bay waterfront, existing water recreational opportunities would be improved and expanded, including repair of the City's only public boat launch at Pier 52; development of small-scale ancillary services nearby, such as a bait shop and convenience retail/food sales, to support operation of the launch; continuation of boat clubs; and expansion of small-boat repair and storage services. If wetlands are developed at the mouth of China Basin Channel, Plan development standards call for new maritime uses nearby to comply with all applicable environmental regulations to avoid any significant detrimental water quality impacts on the wetlands.[3]

Existing uses that would be consistent with the WLUP north of China Basin Channel would include the Fire Department's Station 9 on Pier 22½, also the location of the City's two fireboats, and recent residential development (Delancey Street Foundation and Steamboat Point Apartments), as well as the above-noted South Beach Harbor. South of China Basin Channel, as noted above, existing ship repair, maritime support, and small-boat repair and storage uses would be permitted to remain, as would small offices and restaurants along the Mission Bay Waterfront.

Southern Waterfront

Figures 6a and 6b show the Southern Waterfront subarea. The Plan identifies the Southern Waterfront subarea as the site for long-term consolidation of most of the Port's industrial maritime uses. Objectives include maximizing the use of the existing cargo terminals at Pier 80 and Piers 94-96 and pursuing financing mechanisms to develop competitively priced maritime support facilities, with the eventual intention of providing replacement facilities for existing cargo and warehousing operations relocating from the Northeast Waterfront subarea. Because the Port's existing cargo terminals in the Southern Waterfront subarea are operating at far below capacity and identified Maritime Expansion Areas are not currently in demand for maritime operations, the Plan also calls for allowing interim uses on maritime expansion sites to maximize

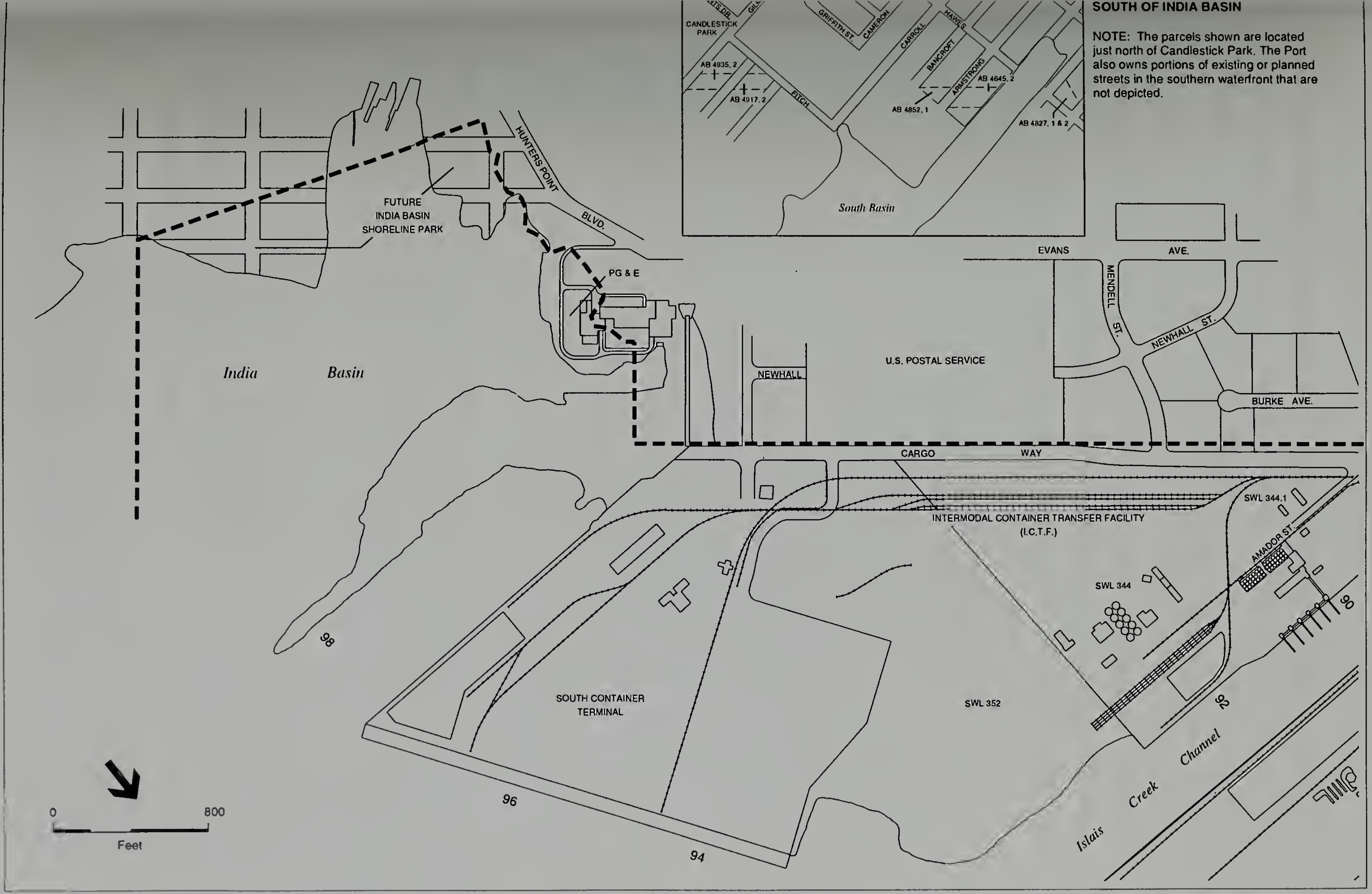


SOURCE: SMWM, 1995

San Francisco Waterfront Land Use Plan EIR ■

Figure 6a

Southern Waterfront Subarea
(Northern Portion)



SOUTH OF INDIA BASIN

NOTE: The parcels shown are located just north of Candlestick Park. The Port also owns portions of existing or planned streets in the southern waterfront that are not depicted.

SOURCE: SMWM, 1995

‒ ‒ ‒ ‒	Waterfront Land Use Plan Area Boundary
SWL	Seawall Lot
┈┈┈┈	Freight Rail Line

Figure 6b
Southern Waterfront Subarea
(Southern Portion)

current revenue while retaining adequate capacity for future maritime growth. Plan objectives identify four specific sites in the Southern Waterfront subarea, currently vacant or underutilized, that the Port believes are surplus to future cargo needs and could be developed with long-term non-maritime commercial uses that would generate needed revenue.

The Pier 70 Mixed Use Opportunity Area includes some of the Union Iron Works Buildings; the Plan identifies three Union Iron Works Buildings as being historic. One of those buildings is of unreinforced masonry construction, known to require seismic strengthening and removal of asbestos and other hazardous materials prior to reuse. The Plan proposes that non-maritime uses be permitted to maximize the opportunity to preserve and restore three historic buildings; accessory retail activities and public access to the Bay and the historic industrial area would be encouraged, although in a manner that does not hinder adjacent ship repair operations.

The Western Pacific Mixed Use Opportunity Area, adjacent to the Pier 80 North Container Terminal, and the Cargo Way Mixed Use Opportunity Area, adjacent to the existing grain elevators at Pier 90, would be available for maritime or non-maritime uses, including light industrial and research and development activities, rather than being reserved for maritime uses exclusively; a power plant is also designated as an acceptable use in the Cargo Way Mixed Use Opportunity Area. The Port has received a proposal for the Cargo Way site for construction of a cogeneration power plant; development standards in the Plan require that, should such a project be approved, environmental protection and design measures and public amenities such as open space and public access improvements be incorporated into the project.

Seawall Lot 354 is located on the inland side of Third Street along the backwater of Islais Creek Channel. In light of the size of the parcel (approximately three acres) and its separation from the Port's container terminals, the Plan would permit maritime and non-maritime uses including general warehousing, industrial and residential.

Existing cargo-related uses at Piers 80 and 94-96 would remain under the Plan. Where interim uses would be permitted on maritime expansion areas that are not anticipated to be utilized for maritime purposes within the next 10 to 20 years, those uses could include, generally for terms of 1 to 10 years and up to 30 years in some cases, non-maritime warehouse, manufacturing, staging activities, use of the grain elevators for other materials, recycling, bio-remediation of petroleum-contaminated soils, and open air storage. Interim uses would have to be compatible with nearby maritime and industrial uses and comply with applicable environmental regulations.

Plan objectives also call for providing public access where possible and for reserving or improving certain areas for protection of wildlife habitat and for recreational use. Plan development standards could result in development of recreational boating at Warm Water Cove (at the foot of Twenty-fourth Street), continued enhancement of the south bank of Islais Creek, the creation of a passive recreational park and wetland with interpretive displays at Pier 98, and development, along with the San Francisco Recreation and Park Department, of India Basin Shoreline Park. The Plan also calls for "appropriate mitigation measures" if development on Seawall Lot 352 (adjacent to the Pier 94-96 container terminal) causes filling of the emerging wetlands at that location.

IMPLEMENTATION OF THE WATERFRONT LAND USE PLAN

The framework of existing State, regional and local waterfront land use regulations limits the variety of development opportunities on Port property and does not permit the diversity of activities called for in the Draft WLUP. Nevertheless, the Waterfront Plan Advisory Board decided that the planning process should consider a full range of desirable land uses for Port property, and that regulatory changes should be recommended if necessary to permit these uses. The Advisory Board further recommended that all applicable plans and policies for the waterfront be consistent with one another, reflecting a consensus for the future use and development of the Port shared by all agencies with jurisdiction over the waterfront.

In addition to establishing consistency among waterfront plans and regulations, the WLUP recommends that the various agencies with jurisdiction over waterfront development work together to streamline and simplify the legal compliance process and to establish a process for coordination among the relevant agencies in the early stages of project development. Implementation of the Plan would require the Port Commission, in cooperation with the Planning Commission and BCDC, to develop a streamlined development process that includes early and ongoing public input and up-front, integrated review of major development proposals by all applicable regulatory agencies. The intention is that prospective developers become aware early in the process of potential community concerns and regulatory obstructions and can act, with Port assistance, to respond to as many concerns as possible to maximize cooperation among all interested parties.

The Port will propose conforming amendments to the following planning and policy documents in order to implement the Draft WLUP and ensure consistency among planning documents. A brief description of the proposed conforming amendments is provided below.

(1) San Francisco City Planning Code
(2) General (Master) Plan of the City and County of San Francisco[4]
(3) San Francisco Bay Conservation and Development Commission's *Bay Plan, Special Area Plan, Total Design Plan, Seaport Plan* and other regulations

Proposed Amendments to the City Planning Code and the Zoning Map

The Project Sponsor will request amendments to the City Planning Code and the Zoning Map in order to implement the policies of the WLUP. The amendments to the Zoning Map would change the use classification, or the boundaries of a special use district overlay zone affecting some of the Port's property. In addition, amendments to the Zoning Map may be proposed which affect building height limits applicable to certain individual sites. Proposed amendments to the text of the City Planning Code generally would change the controls which govern property in the various use districts, amend requirements for conditional use authorization, and impose a design review requirement for certain types of new development.

The text amendments would primarily affect the provisions of Planning Code Sections 240, 240.1 and 240.3, which establish land use controls within the Northern Waterfront Special Use District (NWSUD). The NWSUD currently includes three district subareas: NWSUD #1, covering all piers from Fisherman's Wharf to Pier 24 at the Bay Bridge, and a few Port-owned seawall lots near Fisherman's Wharf; NWSUD #2, covering inland sites not owned by the Port in the Fisherman's Wharf area; and NWSUD #3, covering all other Port seawall lots as well as other inland property bounded by Bay Street on the north and Broadway on the south at the base of Telegraph Hill. The Project Sponsor is proposing amendments only to those sections that govern Port-owned property, NWSUD #1 and #3. In addition, proposed amendments to the use district tables in Article 2 of the Code would more clearly identify maritime uses as principal permitted uses in the M-2 (Heavy Industry) district. Before describing the text amendments in more detail, the proposed amendments to the Zoning Map will be explained, in order to make clear which sites would be affected by the various text amendments.

Proposed Zoning Map Amendments

Property included in the Project Area is classified on the Zoning Map in three ways: use districts, height and bulk districts, and special use districts.[5] All but a few parcels within the Project Area are classified as C-2 (Community Business), M-1 (Light Industry) or M-2 (Heavy Industry). The remaining sites are classified as P (Public), or RC-4 (Residential-Commercial Combined: High

Density). The maps in Section IV.B., Environmental Setting, Land Use and Zoning, pp. 123-156, show the boundaries of the use district designations.

The proposed amendments would change these use district designations at only one location. The property located at the base of Mariposa Street, between Illinois Street and the Bay (Assessor's Block 3941) that is now classified as P (Public) is proposed to be reclassified as M-2, consistent with the designation on adjacent Port-owned properties. The P District is intended for properties owned by governmental agencies that are in public use. Existing uses in this area include a variety of maritime and commercial recreation uses, such as a marina, a boat repair and launch facilities, two restaurants and a fish-processing use. The WLUP policies call for a continuation of such uses, which are not consistent with a P District designation.

The Project Sponsor has not proposed any amendments to the height and bulk district limits at this time. However, the WLUP acknowledges that if a stadium or arena were to be proposed for a site on and near Pier 46B, then an amendment to the 40-X height and bulk district designation would be required. A measure on the March 1996 ballot changed the height and bulk limit from 40-X to 150-X for that site. These issues associated with a ballpark or arena are discussed further under Variant 1, Chapter VII, Variants to the Alternatives, beginning on p. 672.

Some amendments to the height and bulk district designations may be identified through an ongoing Port planning effort to further define urban design guidelines for the Project Area. For example, Pier 7, the public fishing pier, is in a 65-foot height limit district. It is possible that this site would be reclassified to be consistent with the existing low-rise, open space use. In addition, further amendments could be identified as mitigation measures to the extent necessary to mitigate potential significant adverse impacts.

The special use district designation on the Zoning Map refers to an area that is governed by land use controls that are in addition to those that apply within a given use district. For example, a parcel within the Project Area could be classified as C-2, but may also be included within the NWSUD. In that event, any proposed use would have to be authorized under Code requirements applicable within both districts.

The boundaries of the NWSUD would be altered substantially under the proposed amendments. The NWSUD #1, which now covers piers from Fisherman's Wharf to Pier 24, would be extended to include Piers 26, 28, 30-32, 34, 36, 38 and 46B. The NWSUD #2 is not proposed to be amended. The NWSUD #3, which now covers Port-owned seawall lots and non-Port inland properties between Bay Street and Broadway, would be amended to (1) incorporate Port-owned seawall lots 311/312, 313 and 314 (Assessor's Blocks 15-17, 35), which are now included in NWSUD #1; and (2) extend along The Embarcadero to include all Port-owned seawall lots in the South Beach area to China Basin Channel (Seawall Lots 328, 329-336; Assessor's Blocks 3769 [portion], 3770-3771, 3790, 3792, 3801-2, 3880, 46C). The word "Northern" would be dropped from the title; thus the district would be called simply the Waterfront Special Use District. The result of these proposed amendments would be to include all Port properties bayward of Jefferson Street and The Embarcadero from Fisherman's Wharf to China Basin Channel in NWSUD #1, with all inland Port properties within those boundaries included within the NWSUD #3. Port property south of China Basin Channel would not be affected by these proposed amendments. Because the March 1996 ballot measure for the ballpark was adopted, a new Special Use District covering Seawall Lots 335 and 336, and Pier 46B was created, and as a result, those parcels would not be included in the Waterfront Special Use Districts (WSUDs).

Proposed Planning Code Amendments

Amendments to the text of the City Planning Code would correspond in many respects to the use, height and bulk, and special use district designations on the Zoning Map, primarily affecting the land use controls in Section 240 pertaining to the WSUD. If the proposed amendments to the Zoning Map described above were adopted, the controls applicable within the WSUD would cover piers and seawall lots between the Bay Bridge and China Basin Channel that are not currently subject to those regulations.

The Draft WLUP identifies as a key implementation goal a streamlined and simplified design review process for development projects which should seek early, integrated review by the applicable agencies which have design review jurisdiction over the affected development site, rather than the current process of sequential reviews conducted by each agency individually. To address this goal, the Port will propose Planning Code amendments to establish a waterfront design review process to review the architectural and urban design of certain types of new development within WSUD #1. It is intended that this waterfront design review process would involve representatives of the Planning Department, Port, and BCDC (as applicable). However, complete details regarding participants, notice requirements for public hearings and other procedural rules have not been identified as of yet. It is possible that refinements to this approach, or other mechanisms for achieving this implementation goal, will be identified in the course of the public review of the proposed Planning Code amendments.

Within the WSUD #1, waterborne commerce and navigation, and industrial, commercial and other operations directly related to the conduct of waterborne commerce or navigation would continue to be permitted as principal uses. The current requirement for conditional use authorization for all other uses would be amended such that only uses designated as conditional in the underlying use district (e.g., C-2, M-1) would require such authorization.

New uses that occurred within an existing structure (except for associated outdoor accessory parking, public access or open space required to support the new use), were permitted in that use district, were identified as Acceptable Land Uses in the WLUP, and involved no changes to the exterior of the structure (except for repairs or use-related signage or canopies) would also be permitted as principal uses.

Any other new use which is listed as a permitted use in the underlying use district, which would not operate within an existing structure, would require approval through the proposed waterfront design review process, would have to be an Acceptable Land Use under the WLUP, and be consistent with the General Plan. These amendments would replace the criteria currently specified in Section 240.1(b)(1-5) to be considered by the Planning Commission.

Any use which is listed as a conditional use in the underlying use district, and which is an Acceptable Use under the WLUP, would require approval by the City Planning Commission as a conditional use under Section 303c of the Code. The architectural and urban design issues related to the proposed use would require review through the waterfront design review process.

Within the WSUD #3, the Code (Section 240.3) currently requires a conditional use for any development which includes an area of at least three acres, and specifies criteria to be considered by the City Planning Commission upon reviewing conditional uses.

Because of the extension of the special use district to cover seawall lots in the South Beach area, which includes one existing surface parking lot in excess of three acres and is thus subject to conditional use review, the Project Sponsor proposes to exempt parking spaces in lawful existence as of the effective date of the amendment from a conditional use requirement. Similarly, the current requirement for screening the parking use would be amended to exempt pre-existing parking lots.

Section 240 would also be revised to incorporate informational text explaining that uses of Port property are regulated by the public trust and the Burton Act, in addition to local land use controls. In cases where these regulations conflict, the Burton Act would prevail. The introductory text also acknowledges BCDC's jurisdiction over a portion of the Port's property. In order to achieve the stated public objectives set forth for each of these entities, the waterfront design review process is proposed to identify and integrate the State, regional, and local urban and architectural design objectives, to optimize the public enjoyment and beneficial use of this public trust resource.

In addition to the amendments proposed to the special use district provisions, the Project Sponsor proposes to amend the use district tables in Article 2 to clarify that maritime and directly related uses are principal permitted uses in M-1 and M-2 Districts. Currently the Planning Code does not specifically identify such uses as permitted except in the special use district provisions now applicable only in the Northern Waterfront subarea. This amendment would provide that maritime and directly related uses are also principal permitted uses in the Southern Waterfront subarea.

Further amendments could be proposed over the course of the public process for review of the WLUP and implementing amendments. Some amendments may be suggested as mitigation measures to address potentially significant adverse impacts. Any amendments not identified here and subsequently proposed would be subject to environmental evaluation prior to adoption.

Proposed Amendments to the San Francisco General (Master) Plan[4]

The Project Sponsor will request amendments to the San Francisco General (Master) Plan in order to establish consistency with, and to enable implementation of, the WLUP. Amendments will be proposed primarily to the Northeastern Waterfront Plan, an area plan which establishes land use policy for four of the five WLUP subareas. Additional amendments will be proposed to the Commerce and Industry Element, the Central Waterfront Plan, and the Recreation and Open Space Element. A detailed summary of the proposed amendments is presented in Section V.A., Environmental Impacts, Public Plans, Policies, and Regulatory Agencies: Comparison, pp. 364-395.

Northeastern Waterfront Plan

The proposed amendments provide a comprehensive update to reflect the removal of the Embarcadero Freeway and construction of transportation and pedestrian/public access improvements planned or underway along the entire stretch of The Embarcadero surface roadway; planned or completed new public open spaces; and the transition of most of the area from industrial and maritime (predominantly cargo shipping and related) uses to urban mixed use residential and commercial neighborhoods. New policies are proposed to protect remaining cargo-related industry uses, protect and improve facilities for the fishing industry, and promote the development of new commercial and recreational maritime activities (e.g., ferries, excursion boats, historic ships, cruise, recreational boating).

Revisions are proposed which would identify opportunities for maritime mixed use developments, which promote the development of new commercial and recreational maritime activities and public access improvements as part of mixed use projects which also include revenue-generating uses. Land use policies for all of the piers in the South Beach subarea, and many of those in the NWP's Base of Telegraph Hill subarea which currently are reserved for maritime uses only would be revised to encourage a mix of maritime, non-maritime and public access uses which improve and attract people to the waterfront, and integrate it with the rest of the City. Proposed policies also call for the creation of a "PortWalk," as discussed previously in this chapter (p. 17).

Commerce and Industry Element

Proposed amendments would provide an updated explanation of the decline in cargo shipping activity in San Francisco, and the key factors involved. In light of this condition, a policy amendment is proposed to allow interim leases for non-shipping operations until the Port's facilities are needed for maritime uses. Other amendments are proposed to acknowledge the need for revenue-generating uses to help finance growing Port expenses.

Central Waterfront Plan

Similar to the Commerce and Industry Element, proposed amendments would explain industry changes and trends which have led to a decline in cargo activity (particularly container shipping) at the Port, but in more detail. For that reason, a proposed amendment would allow maritime, industrial or commercial uses on the former Western Pacific railyard adjacent to the North Container Terminal, instead of reserving that railyard exclusively for maritime uses. Other policy amendments would allow revenue-generating commercial and industrial uses to encourage the preservation and rehabilitation of three Union Iron Works Buildings near Pier 70.

Recreation and Open Space Element

The majority of the proposed amendments would provide an updated statement of existing conditions and recent efforts to develop new waterfront open spaces. Other amendments are proposed to incorporate the creation of a PortWalk, made up of pierside open spaces connected to public sidewalks and pedestrian amenities along The Embarcadero.

Proposed Changes to BCDC's Bay Plan, Special Area Plan and Total Design Plan

The Port and BCDC have entered into a memorandum of understanding (MOU) which establishes a process for negotiating specific amendments to the Bay Plan, Special Area Plan and the WLUP to establish conformity between the WLUP and BCDC policies and regulations. These agencies are mutually interested in jointly developing conforming amendments which can be implemented by BCDC consistent with its responsibilities under the McAteer-Petris Act. However, to the extent it is determined that certain issues cannot be fully reconciled within this existing framework, it is possible that full implementation of the WLUP would require amendments to McAteer-Petris or other legislation.[6]

The Port will propose amendments to the Special Area Plan that would incorporate relevant policies of the WLUP into the Special Area Plan. In addition, urban design and public access standards developed by the Port as part of its Urban Design and Historic Preservation Guidelines are intended to articulate a consistent approach to providing high-quality public access on the San Francisco waterfront. These concepts will be presented to BCDC and proposed for inclusion in the Special Area Plan, where appropriate. The Total Design Plan may be eliminated in favor of these other Plan amendments.

In addition to the general integration of land use or design concepts from the WLUP into BCDC's relevant planning documents, the Port will propose amendments to address several policy issues. The extent to which these policy objectives are reflected in BCDC's actions will determine whether or to what extent the full range of land uses identified in the WLUP will be realized. The primary issues are summarized below.

- The WLUP envisions some mixed use developments on piers which are likely to require substantial reconstruction work that would be considered replacement fill under a 1986 informal letter opinion of the Attorney General interpreting the McAteer-Petris Act. In this case, "mixed use" means water-oriented and incidental non-water-oriented uses. Amendments will be proposed to the Bay Plan and Special Area Plan that would permit some non-water-oriented uses as part of replacement pier projects if the non-water-oriented uses are incidental to the primary permitted water-oriented use.

- Section 66605 of the McAteer-Petris Act states that only water-oriented uses are allowed on Bay fill, and as currently interpreted precludes some uses which have been determined by the State Lands Commission to be consistent with the public trust. The Port may propose that uses that BCDC does not consider to be water-oriented but have been determined by the Port and State Lands Commission to be consistent with the trust be permitted in replacement fill projects because they are consistent with the trust and they would contribute to the financial viability of permitted projects. Accessory parking and maritime offices are examples of such uses.

- Many of the pierhead or bulkhead buildings are currently used for general office and other non-water-oriented uses and may continue to be so used, or new office or other non-water-oriented uses may be proposed for these buildings. The Port may propose amendments to BCDC regulations, or the McAteer-Petris Act if required, to allow such uses to continue or be permitted.

- Part V of the Bay Plan, subsection (5) of Fills in Accord with the Plan, will be reviewed by the Port. The Port may propose amendments to the policy to reflect current conditions (piers removed, new public access in place and in progress) and opportunities to bring people to the waterfront. For example, a proposed amendment could eliminate the distinction between permitted uses of replacement fill on publicly- versus privately-owned land, by permitting Bay-oriented commercial recreation or public assembly uses on 100 percent of the publicly owned replacement fill, as is currently permitted for privately owned land. This amendment would consequently reduce the amount of additional public access and/or open water required by eliminating the current rule which limits replacement fill for commercial recreation or public assembly uses to 50 percent on publicly owned land with the remainder devoted to open water or public access.

- In order to provide an incentive for the removal of obsolete piers, the Port may propose amendments to the General Policies of the Special Area Plan. Currently, the Special Area Plan permits the removal of obsolete piers by allowing reconfiguration of new piers for Bay-oriented commercial recreation use within the same vicinity (defined by three zones in the Special Area Plan). The Port may propose to expand the definition of vicinity within which replacement fill may be transferred as part of a single project involving reconfiguration of replacement piers for water-oriented uses.

- Existing restaurants and other commercial recreation uses on piers are permitted to continue under the WLUP. Part V of the Bay Plan will be reviewed with the intent of amending the replacement fill policy to allow the substantial repair of existing piers supporting existing Bay-oriented commercial recreation uses without the current limitation that no more than 50 percent of the area uncovered could be used for Bay-oriented commercial recreation, the remaining 50 percent required to revert to open water or public access.

- The Port and BCDC will review needed repairs on piers and classification of repairs which constitute substantial repair, and therefore are considered fill; repairs which are routine maintenance (or otherwise would be allowed); and repairs which would require consideration on a case-by-case basis, and determine the resulting regulatory implications and public access requirements. The Port may propose that BCDC consider taking action that would allow existing non-water-oriented uses or short-term interim uses contemplated by the WLUP to continue operations after substantial seismic and life safety repairs are made, without triggering the 50 percent replacement rule.[7] This approach would be similar to non-conforming use ordinances prevalent in local government zoning codes.

- The McAteer-Petris Act states that development permitted within BCDC's jurisdiction, on the shoreline and in the Bay must provide "maximum feasible public access, consistent with a proposed project. . ." The Bay Plan and the San Francisco Special Area Plan policies on public access provide some direction but do not differentiate between public access for interim vs. permanent uses. In general, BCDC requires access open to the public both to and along the shoreline of project sites. The WLUP concludes that some interim uses that would be developed on existing land and piers cannot support the cost of public access improvements that BCDC normally requires of permanent development in its jurisdiction. The Port may propose that BCDC apply reduced public access requirements for some interim uses, including those on piers that require no repairs or only minor repairs to accommodate the use.

- For areas which are not designated as port-priority use areas in the Bay Plan and BCDC/MTC Bay Area Seaport Plan, BCDC regulations are silent on the length of interim use terms that BCDC may permit. The Seaport Plan, which pertains to Port lands designated for port-priority use in the Southern Waterfront subarea, provides that "until such time as there is a demand for the Port's unused facilities" the Port should be able to lease its maritime lands for interim uses. The WLUP would permit interim uses on piers north of China Basin Channel generally for periods of up to 10 years where necessary to amortize development costs of interim uses (longer lease terms could be negotiated through a public review process in.exceptional cases). On the Southern Waterfront, the WLUP would allow 10-year leases, with exceptions for 20- to 30-year leases when necessary, to make productive use of the Port's lands not needed in the shorter term for maritime use. The Port may propose that BCDC permit these longer terms for interim uses when the need is demonstrated.

Proposed Changes to BCDC's Seaport Plan

The *San Francisco Bay Area Seaport Plan* update was approved by BCDC in April 1996. During the *Seaport Plan* update process, the Port recommended to BCDC changes to port priority use designations and interim use policies to establish consistency between the updated *Seaport Plan* and the Draft WLUP. A summary of the changes made in the approved *Seaport Plan* update is presented in Appendix D, Assumptions Used in Development of EIR Alternatives.

C. EIR APPROACH

PURPOSE AND SCOPE OF THE EIR

The principal purpose of this EIR is to provide the Board of Supervisors, City Planning Commission, Port Commission, BCDC, other public decision-makers, and the public with a clear and objective assessment of the potential environmental consequences of implementation of the WLUP, based on the Alternatives and variants described, and to identify mitigation measures to eliminate or minimize adverse impacts. The EIR also serves as an informational tool for policy-makers with jurisdiction over various aspects of development within the Project Area.

The WLUP EIR is a Program EIR, as defined in California Environmental Quality Act (CEQA) *Guidelines* Section 15168, providing a comprehensive evaluation of impacts associated with the development allowed by the WLUP, within the context of future growth in San Francisco and the Bay Area region. The analyses contained herein will allow decision-makers to make informed decisions on the policies, objectives, development standards, and range of acceptable uses proposed for the WLUP Project Area. This EIR does not evaluate the impacts of potential development at a project-specific level; specific development projects proposed after adoption of the WLUP would be subject to subsequent, project-specific environmental review. However, this EIR may be used to reduce the scope of environmental review for subsequent development projects within the WLUP Project Area. This Program EIR will thus provide an overall context in which to consider decisions made for future, more detailed levels of project implementation, as well as provide a broad areawide analysis for planning purposes.

APPROACH TO ALTERNATIVES

Because the "project" analyzed in this EIR is a plan, and not a single development proposal, and because the Draft WLUP contains an array of potential land uses for each subarea, the challenge for the EIR is to adequately cover the very large and unpredictable number of potential "future waterfront" outcomes that could occur. To address this issue, the EIR analyzes three Alternatives and four variants on the Alternatives. The Alternatives include a No Project Alternative and two development scenarios (Alternative A and Alternative B). The Alternatives are assessed at an equal level of detail. The four variants to the Alternatives are assessed at a lesser level of detail.

The three EIR Alternatives generally represent a progression from low to high levels of new development and activity. The No Project Alternative generally represents the lowest level of development, undertaken in a piecemeal fashion without a comprehensive approach. Alternative A generally represents a moderate-development scenario, with an emphasis on smaller-scale development and local-serving uses, and interim uses such as light industrial, warehousing, and general industrial. The focus would be on adaptive reuse of existing facilities. Alternative B generally encompasses the greatest level of new maritime and non-maritime development and improvements to Port facilities, emphasizing visitor-serving uses and waterfront attractions in combination with high levels of industrial maritime activity. Alternative B is characterized by larger-scale development involving more new construction than the other Alternatives. Under all three Alternatives, many of the existing waterfront uses would remain. The Alternatives assume that Plan objectives for non-industrial water-dependent uses, including cruise ships, excursion boats, ferries, recreational boating, tugboats and water taxis, are achieved to varying degrees at various locations. The Alternatives vary the mix and location of these non-industrial as well as industrial maritime uses (and other uses) to highlight potential adverse effects on the environment that could result from the policies contained in the WLUP. Section III.D., EIR Alternatives, describes the EIR Alternatives in more detail.

Chapter VII, Variants to the Alternatives, analyzes four variants on the EIR Alternatives. The variants include: (1) potential development of a ballpark near the foot of Berry Street, as a variant to Alternative B (with discussion of potential development of a sports arena instead of the ballpark); (2) removal of certain piers that would be surplus to the needs of maritime uses, with the resulting Bay frontage to be reserved as open space, as a variant to Alternative A; (3) potential development of a sports arena on Rincon Hill, as a variant to the cumulative context of all Alternatives; and (4) potential development of residences and retail uses outside the Project Area and near China Basin Channel, as a variant to the cumulative context of all Alternatives. See Chapter VII, Variants to the Alternatives, pp. 672-711, for further description.

The complex regulatory environment in which the Port operates constrains the range of alternative outcomes that might occur, so that the EIR must start with a narrower range of alternatives than it might without such constraints. Additionally, because it is not possible to predict all future physical changes that could occur under the WLUP, the Alternatives are theoretical, and represent certain sets of assumptions. The assumptions underlying the EIR Alternatives were formulated by Port and Planning Department staff, along with the EIR consultant team, to reflect potential future conditions with respect to economic development, the Port's responsibilities under the public trust, policies in the San Francisco Master Plan, BCDC plans and regulations, the updated *Seaport Plan*, and other influencing factors or constraints. The assumptions are discussed in Appendix D.

Neither of the development Alternatives (A and B) is necessarily indicative of an actual outcome; rather, those Alternatives are designed to represent a range of future physical changes, all of which are possible under the WLUP, so that the EIR can cover a broad range of development and activities. The degree to which these outcomes could be realized varies depending upon Planning Commission, Board of Supervisors, Port Commission, and BCDC implementing or actions. This approach is intended to provide the public and decision-makers with an understanding of the relationships between various uses, related environmental impacts, and possible mitigation measures and Plan revisions to reduce impacts. The WLUP, if adopted, and its resulting physical effects would likely be some combination of Alternatives A and B with or without their variants, and the adopted Plan might have other components that would fall within the range of impacts analyzed.

The EIR Alternatives for the WLUP are defined in general terms; the development and activity that could occur under each Alternative is represented by types and amounts of building space and open land area, maritime activity levels, number of housing units, and number of hotel rooms. The Alternatives are also defined by varying expectations about changes to certain policies and regulations that control the type or amount of development permitted within the Project Area, the share of regional cargo growth forecast to be accommodated in San Francisco and the Port's share of City and regional economic growth. Estimates of development and activity are presented and analyzed in the EIR at the subarea level; with the exception of a few clearly site-specific and/or major land uses, such as a cruise terminal, sports arena, or container shipping terminal, the EIR does not assume precise locations of future uses within the subarea. The aggregation of land uses by subarea provides information about geographic areas of analysis that is considerably more useful than if the entire waterfront were examined as a whole, while recognizing that exact locations of specific future developments cannot be predicted, thus enabling the EIR to adequately cover considerable variety in the ultimate location of future land uses.

To analyze some types of impacts, the Alternatives have been translated into estimates of Project Area employment and population. Those estimates should not be considered the only possible outcomes, but rather reasonable scenarios of what is likely to occur under each Alternative. (Sections V.B., Environmental Impacts, Land Use and Growth-Inducing Impacts, and V.C., Environmental Impacts, Population, Housing and Employment, describe the land use estimates and employment and population estimates associated with each Alternative.)

PERSPECTIVES FOR IMPACT ASSESSMENT

There are two perspectives for the EIR analysis of the WLUP Alternatives: the local perspective, and the City and regional perspective. The local perspective analyzes growth and physical changes represented by the Alternatives within the Project Area and in the vicinity of the Project Area, i.e., in adjacent commercial/industrial areas or nearby residential neighborhoods. The City and regional perspective looks at the EIR Alternatives in conjunction with other future development and change, to assess the combined effects of that larger amount of activity. Both perspectives are considered cumulative: the local perspective because it involves the cumulative effects of all assumed development within the Project Area; and the City and regional perspective because it involves the cumulative effects of Project Area plus Citywide and regional development.

Impacts assessed from the Citywide and regional perspective are those on Citywide and regional resources with respect to transportation systems, energy resources, air quality, and the housing market, for example. The rationale behind this perspective is that infrastructure, transportation facilities, housing supply, and other systems that would serve the Project Area would also be expected to serve a larger total number of residents, visitors, and employees in the future, due to continued Citywide and regional economic growth and development, of which the WLUP Project Area would be only one part. In sections covering public plans, policies and permits and community services and infrastructure, the perspectives of the analyses vary from local and Citywide to regional, as appropriate.

The WLUP EIR uses Association of Bay Area Governments (ABAG) demographic projections to define the estimated existing (1995) and future (2010) cumulative context for Citywide and regional growth. ABAG's *Projections '94* provides estimates of expected future employment, population, housing units, and employed residents for San Francisco and the other eight Bay Area counties. The 2010 forecasts in *Projections '94* were used to represent one underlying regional economic scenario for all EIR Alternatives (the use of one scenario is discussed in Appendix D, Assumptions Used in Development of EIR Alternatives).

For the local analyses, areas adjacent to the Project Area are generally grouped by WLUP subarea; individual adjacent land uses or particular neighborhoods will be discussed if they are key uses or particularly sensitive to environmental impacts. For the Citywide and regional analyses, areas outside the Project Area but within the City of San Francisco will be grouped together and termed "rest of City." Other counties included in the ABAG demographic projections will be grouped together and termed "the Bay Area region." The cumulative Citywide and regional context for Project Area development is discussed in Appendix E, Future Context and Projections.

ANALYSIS YEARS

Setting

The EIR describes existing conditions for the Project Area, as well as for nearby areas and the cumulative context, where appropriate. The Setting year for the WLUP EIR is 1995. Data collection for most sections of the EIR was completed in 1994 and 1995. Where no data for 1995 were available, the best recent available data were used.

Impacts

Development within the WLUP Project Area would occur as a series of individual projects, proposed, designed and constructed over a number of years. Because most of the specific projects that would be developed in accordance with the WLUP are not known at this time, the exact amounts, types and locations of development that would have occurred by any particular year cannot be estimated. Similarly, it would be difficult to determine by what time development of all parcels within the Project Area ("build-out" of the Project Area, according to the WLUP) may occur.

For this EIR, 2010 has been chosen as the year for analysis of both the local and the Citywide and regional WLUP impacts. This year is the long-term horizon year for the scenario of future regional population and jobs in ABAG's *Projections '94*. The future analysis year is seen in this EIR not as the precise point at which a certain amount of development within the Project Area would have occurred, but more as a reasonable benchmark for measuring a general amount of land use change within the Project Area against a cumulative context of other growth and change in the rest of the City and the region. (See Appendix E for discussion of the cumulative context.)

The impacts analysis in this EIR is not meant to address all of the impacts of complete build-out of the WLUP Project Area. Although the Alternatives analyzed in the EIR are meant to bracket a range of potential uses, for a number of reasons, they are not meant to represent the most intensive types of uses allowed for every site within the Project Area, or the greatest amount of development that could occur on every site over time. First, it is not reasonable to assume that all Port properties would be developed or redeveloped by 2010, given the expected pace of waterfront, City and regional growth. Second, various economic, regulatory, and political constraints work to limit development in an area as large as the waterfront to less than the maximum permitted by zoning, as evidenced throughout San Francisco. Third, site- and project-specific decisions based on marketing and other factors often dictate development smaller than the maximum buildout. While no Alternative represents a maximum buildout scenario, Alternative B is considered to represent a maximum reasonable level of development and intensity of activity achievable by 2010. As such, the analysis of potential impacts under Alternative B highlights a scenario intended to disclose the reasonable maximum number and intensity of impacts that could occur under the WLUP over the next 15 years.

Proposition H requires the Port to review the WLUP every five years. As part of future environmental review, the horizon for impact analysis can be extended beyond 2010, and the assumptions regarding buildout can be adjusted to reflect actual trends.

Interim Uses

As stated previously in Section III.B., Waterfront Land Use Plan, pp. 11-46, the WLUP includes policies regarding interim uses, with the intention of encouraging such uses to "maximize the productivity of its existing facilities until permanent uses are developed." As a result of these policies and the range of acceptable uses proposed in the WLUP, some existing uses might continue as interim uses, and some new interim uses might be developed. In either case, the types of uses that would be developed on certain sites within the Project Area over the long term might be different than the types of uses that would occupy the sites for an interim period. Correspondingly, the environmental impacts of the interim uses might be different than the impacts of the long-term uses.

This EIR addresses the impacts of interim uses through Alternative A, which includes new interim uses in all subareas except the Ferry Building subarea, and the continuation of some existing uses in all subareas. For Alternative A, it is assumed that the interim uses developed still exist in 2010. Specific interim uses emphasized are light industry, general industry, and warehousing.

RELATIONSHIP TO OTHER RELATED PROJECTS

The WLUP EIR analysis was prepared taking into account the potential environmental effects of a number of other projects that are also in various stages of environmental review.

Mid-Embarcadero Roadway/Terminal Separator Structure

The City and County of San Francisco, California Department of Transportation, and the Federal Highway Administration (FHWA) are exploring alternatives to replacement of the Embarcadero Freeway and the Terminal Separator Structure, which handled traffic to and from the City via the Bay Bridge and I-80 (Embarcadero Roadway EIR). All of the alternatives anticipate a surface roadway along The Embarcadero, and local street and intersection improvements to facilitate traffic flow and access to the I-80/US 101 freeway. Some alternatives also anticipate new ramps and modifications to existing ramps to and from the freeway. A joint EIR/EIS addressing these alternatives is under way. The Draft EIR/EIS was published in August 1995, and the public comment period ended in October 1995. In January 1996, the San Francisco Board of Supervisors selected a hybrid alternative referred to as the "DPT Variant" as their preferred alternative. The DPT Variant would modify the existing Fremont Street off-ramp from I-80 westbound, modify the existing Fourth Street off-ramp from I-80 eastbound, realign the Mid-Embarcadero Roadway with a split-roadway configuration and central plaza in front of the Ferry Building, and implement a package of local street improvements. The City, Caltrans, and FHWA are currently working on responses to comments, and are preparing a proposed FEIS to include the preferred alternative.

All of the alternatives examined in this WLUP EIR assume the implementation of Alternative 3A (Second Street Option), which involves reconstruction of The Embarcadero surface roadway between Folsom Street and Broadway to resemble the reconstructed roadway to the north and south, implementation of a package of local street and intersection improvements, construction of new ramp connections between surface streets and I-80/US 101, and modification of several ramps (Alternative 3A is described in Section V.D., Environmental Impacts, Transportation, p. 450). In general, the DPT Variant would have similar traffic volumes with slightly higher total vehicle-miles traveled on local surface streets between Second and Fourth Streets than Alternative 3 (Second Street Option). Traffic volumes and congestion levels on the waterfront would be similar.

Hyde Street Harbor and Pier 45

The San Francisco Department of City Planning, Office of Environmental Review, is preparing an EIR (the Hyde Street Harbor EIR) for reconstruction of the east side of the Hyde Street Pier and addition of up to 60 berths (an alternative looks at the addition of up to 116 berths), with priority given to fishing vessels; construction of support facilities for the harbor; and development of a Fisheries Center and associated facilities in Sheds A and C on the east side of Pier 45. The Hyde Street Harbor EIR focuses on the impact of the project on water quality in the harbor area and the adjacent Aquatic Park, and traffic impacts from the Fisheries Center. The Draft Hyde Street Harbor EIR was published for public and agency review in April 1996.

All of the Alternatives examined in this WLUP EIR include the proposed Hyde Street Harbor project. The Alternatives incorporate varying assumptions about the use of the new berths: Alternative A assumes that some of the berths would be used by recreational boats (as an interim use); the No Project Alternative and Alternative B assume that all of the berths would be used for fishing. The Alternatives also incorporate varying assumptions about the level and types of development involved with the proposed development on Pier 45 in Sheds A and C: the proposed Fisheries Center is not assumed for the No Project Alternative; partial development similar to the No Project Alternative being studied in the Pier 45 EIR is assumed for Alternative A; and full development similar to Alternative A being studied in the Pier 45 EIR is assumed for Alternative B. As part of its analysis of impacts within the Fisherman's Wharf subarea, this EIR will address, at a general level of detail, the impacts that could occur from development of the Hyde Street Harbor and Pier 45 projects, including transportation and water quality impacts. This EIR will not evaluate the impacts of those projects at a project- or site-specific level.

Ferry Building Renovation

The Port is considering a proposed historic restoration of the Ferry Building and development of a mixed use commercial and transportation center. The project would include restoration of historic elements of the building, structural and mechanical upgrades to the existing systems, and tenant and interior space design and improvements. Two land use scenarios are being analyzed in the environmental review for the Ferry Building proposal: a retail/entertainment alternative, and a retail/office alternative.

The Alternatives examined in this WLUP EIR incorporate varying assumptions about the Ferry Building renovation project. The No Project Alternative and Alternative A assume primarily retail/entertainment uses in the Ferry Building; Alternative B assumes primarily retail/office uses in the building (with the ground floor reserved for public access and retail uses). As part of its analysis of impacts within the Ferry Building subarea, this WLUP EIR will address, at a general level of detail, the impacts that could occur from the Ferry Building renovation project.

Downtown Ferry Terminal Improvements

The Port is proposing expansion and improvements to the Downtown Ferry Terminal at Pier ½. The project would include relocation of the ferry barge at Pier ½ closer to Ferry Plaza, possible construction of a breakwater south of the Agriculture Building, construction of new ferry barges on the south side of Ferry Plaza, improvements to Pier 1 for excursion boat berthing, and improvements to the passenger waiting areas and passageways. In the future, passenger facilities for hovercraft service might be added in the vicinity of the Agriculture Building, and some parking spaces could be added.

The Alternatives examined in this WLUP EIR incorporate varying assumptions about the Downtown Ferry Terminal renovation project. The No Project Alternative and Alternative A reflect all of the elements of the proposed Ferry Terminal project except the improvements for hovercraft service; Alternative B reflects all elements including the hovercraft improvements. As part of its analysis of impacts within the Ferry Building subarea, this EIR will address, at a general level of detail, the impacts that could occur from the Ferry Terminal project.

Cogeneration Facility

The California Energy Commission (CEC) conducted an environmental review of a proposed cogeneration facility on Seawall Lot 344 in the Southern Waterfront subarea. The project would be owned and operated by San Francisco Energy Company (SFEC), an independent power company that won a bid to supply Pacific Gas & Electric Company with new electrical generating capacity. The proposed plant would use natural gas to generate up to 240 megawatts of electricity and up to 100,000 pounds per hour of steam. The steam would be used to operate a wastewater reclamation plant and/or to sell steam for heating buildings in downtown San Francisco.

The CEC's environmental review and certification process has been approved as a "functionally equivalent" process that satisfies CEQA requirements. (The process for environmental review is specified under Public Resource Code Division 15 [Section 25000 et seq.].) SFEC filed an Application for Certification (a document that examines the environmental impacts of a proposed facility, among other factors, in order to determine the acceptability of the proposal) in July 1994. The CEC accepted the AFC as "data adequate" in September 1994, and CEC staff completed a Final Staff Assessment (FSA) in June 1995. The FSA concludes that "there are no significant unmitigable adverse impacts associated with the development of the cogeneration project at the Port site."

On October 24, 1995, the CEC issued a Proposed Decision recommending construction of the cogeneration plant. The Proposed Decision includes conditions to address potential changes to the visual environment, short-term traffic disruptions, increases in nighttime noise levels, erosion, and remediation of contaminated soils on-site. The Commission has not taken final action on the project.

The proposed cogeneration facility on Seawall Lot 344 in the Southern Waterfront subarea is incorporated into EIR Alternative A. As part of its analysis, this EIR will address, at a general level of detail, the impacts that could occur from development of the cogeneration facility or similar industrial use. This EIR will not evaluate the impacts of the cogeneration project on a project-specific level.

Rincon Hill Arena

The San Francisco Planning Department, Office of Environmental Review, and the U.S. Postal Service are preparing a joint EIR/EIS for the potential development of a sports and entertainment center at the base of Rincon Hill, on a site generally bounded by Spear, Harrison, Beale, and Folsom Streets and also including property on the north side of Folsom Street. Four alternatives are being analyzed in the EIR/EIS. Two of the alternatives would involve construction of a 21,000-seat sports and entertainment arena with up to 450,000 sq. ft. of associated entertainment-oriented retail space. A third concept envisions construction of a 10,000-seat event center for musical and theatrical performances, a multi-screen cinema complex, and 300,000 sq. ft. of retail space. The fourth concept would entail buildout of the subject site under existing Master Plan and zoning designations, including the existing Rincon Hill Plan, resulting in construction of approximately 1,000 residential units and about 168,000 sq. ft. of retail space. The Rincon Hill project is considered in this EIR as a variant to the EIR Alternatives (see Chapter VII, Variants to the Alternatives, beginning on p. 672).

Hunters Point Shipyard

The San Francisco Planning Department is currently preparing an Area Plan on the reuse of the Hunters Point Naval Shipyard. The proposed Draft Plan can be characterized as an "arts/industrial village." Large portions of the northern part of the plan area would be a mixed use district, with open space and cultural facilities near the water (at Drydocks 2 and 3). Historic buildings would be preserved, particularly in the northern portion of the plan area. The mixed use district there would retain its existing artist studios, plus allow for up to 500 new live-work spaces, in addition to start-up spaces for incubator businesses. These businesses could expand into the southern portion of the plan area, where lots are larger and there would be more of an industrial focus. Hunters Point Hill would be dedicated almost entirely to residential uses, with the potential for 800 new units (as well as 500 new units within the mixed use areas). The San Francisco Redevelopment Agency is preparing a Redevelopment Plan for the shipyard that, if adopted, would aid implementation of the Area Plan.

The U.S. Navy is preparing an EIR/EIS on the Draft Area Plan in cooperation with City staff in the Planning Department and Redevelopment Agency. Environmental review of the Draft Plan began in 1995, and a public review document is expected in spring 1996.

Given the current status of the reuse plan, the long-term nature of development designated by the plan, the need for substantial infrastructure improvement and the likelihood that uses developed in the plan area would be shifts from development already projected to occur elsewhere in the City, the Alternatives examined in this WLUP EIR do not add the proposed Hunters Point reuse plan to the cumulative context.

Treasure Island

The San Francisco Planning Department is preparing a proposed reuse plan for Treasure Island. A draft plan is expected in the summer of 1996. The plan is expected to look at four alternatives: (1) use of part of the island for a theme park, hotel, and entertainment uses with a sports complex; (2) use of part of the island for destination entertainment uses with a resort and hotel/conference center; (3) residential uses; and (4) use of most of the island as a theme park. The alternatives are influenced by the need for substantial seismic remediation on the island, including strengthening of the perimeter of the island and the main causeway. An EIR/EIS, to be prepared by the U.S. Navy in consultation with the Planning Department Office of Environmental Review, will assess the environmental effects of a preferred concept and the other alternatives considered in the reuse plan. The EIR/EIS is expected to be completed by summer 1997.

Given the current status of the reuse plan, the long-term nature of development designated by the plan, and the likelihood that some uses developed in the plan area could compete with uses contemplated as part of the WLUP, the Alternatives examined in this WLUP EIR do not add the anticipated Treasure Island reuse plan to the cumulative context.

D. EIR ALTERNATIVES

ASSUMPTIONS USED IN DEVELOPMENT OF ALTERNATIVES

The extent, types, and locations of development that would actually occur if the WLUP were approved would depend on a number of factors. Some of these factors relate to the Port's ability to achieve changes in agency policies and regulations. Other factors involve the rate of growth in regional maritime activity and the extent to which San Francisco facilities are able to capture that growth. Still other factors include market demand and availability of investment capital for commercial development along the waterfront. In order to construct development scenarios for the EIR analysis, assumptions were developed for these factors, as well as for other factors that could affect development within the Project Area or in the local and Citywide/regional context. Appendix D details assumptions regarding plans, policies and regulations, growth in cargo shipping, and City and regional economics.

CHARACTERIZATION OF THE ALTERNATIVES

Land Use Categories Used in EIR Analysis

Land use categories describing existing and potential future land use and economic activity in the WLUP Project Area were developed for the EIR. The types of uses and activities in each category are based on definitions in the Draft WLUP (see Appendix C of this EIR). The Draft WLUP lists 31 categories of land uses that are acceptable on one or more sites within the WLUP Project Area. For purposes of the EIR analysis, some of these land use categories have been consolidated. The land use categories used in the EIR analysis, and their relationship to the categories in the Draft WLUP, are shown in Table 1.

TABLE 1: LAND USE CATEGORIES USED IN EIR ANALYSIS AND DRAFT WATERFRONT LAND USE PLAN

EIR Land Use Category	Corresponding Waterfront Plan Land Use Categories
Residential	Residential
Hotel	Hotel
Retail: Neighborhood Retail Regional, Large-Scale Retail Specialty, Visitor Retail	Retail/Restaurants Artist/Designers (Galleries)
Assembly/Entertainment/Recreation	Assembly and Entertainment Recreational Enterprises Visitor Center Museums
Wholesale Trade/Promotion Center	Wholesale Trade/Promotion Center
Office/Research & Development	General Office Maritime Office Academic Institution
Warehouse/Light Industrial	Warehousing (Storage, Non-Maritime) Artist/Designers (Studios, Live-Work)
General Industry	General Industry Power Plant
Cargo Shipping	Cargo-Related
Ship Repair	Ship Repair
Fishing Industry	Fishing Industry
Recreational Boating and Water Use	Recreational Boating and Water Use
Ferry, Excursion Boats, Water Taxis	Ferry & Excursion; Water Taxi
Cruise	Cruise
Maritime Support	Maritime Support
Historic Ships	Historic Ships
Parking	Parking
Transportation Facilities	Transportation (Services)
Community Facilities	(Individual Uses [e.g., fire stations] Classified Separately)
Open Space	Open Space
Public Access	Public Access
Temporary and Ceremonial Berthing	Temporary and Ceremonial Berthing

SOURCE: Draft WLUP and Recht Hausrath & Associates

Introduction to Land Use Estimates

When characterizing Alternatives that represent potential outcomes of the WLUP, it is difficult to use the descriptors that are typically used to characterize a proposed plan. For example, it is difficult to quantify the acreage within the Project Area designated for each category of land use, because the WLUP designates several very different potential types of acceptable land uses for most sites. It is also difficult, on the basis of Plan designations alone, to quantify the acreage in the Plan Area that would be developed in a particular land use type, because the sizes of certain sites could change in the future (i.e., if the development of piers is subject to BCDC replacement fill policies).

Nevertheless, in order to conduct a useful environmental analysis, including a quantitative transportation analysis, quantitative estimates of potential future land use changes on the subarea level were made for each of the Alternatives. These estimates were made by Recht Hausrath & Associates, independent economic consultants to the EIR team, based on their expertise and knowledge of economic conditions and forecasts related to the San Francisco waterfront and with input from San Francisco Planning Department staff, City Attorney staff, EIR consultant staff, BCDC cargo shipping projections, and Port staff. The land use estimates were developed to be consistent with the conceptual characterizations of the three EIR Alternatives.

The quantitative estimates of land use changes that could result under the WLUP are intended to enable EIR discussion of the full range of tangible potential impacts, despite the probability that the amount and exact locations of actual future uses and activities in the Project Area in 2010 will likely be different than the particular scenarios analyzed as Alternatives.

The following subsection presents estimates of the space (in square feet) devoted to the different land use categories in 1995 (existing) for the entire Project Area, and net changes in square feet by land use category for each Alternative, for the entire Project Area. Section V.B., Environmental Impacts, Land Use and Growth-Inducing Impacts, includes tables with estimates of the space devoted to the different land use categories in 1995 and 2010, by Alternative, land use type, and WLUP subarea. The estimates in this chapter and in Section V.B. combine estimates of building space and open land area; the latter represents land, exclusive of buildings, used for various types of activities in the Project Area. Most of the land use types are represented by gross square footage; residential uses are presented as numbers of housing units, and hotel uses are presented as numbers of hotel rooms.

The estimates of land use in 1995 are based on a detailed inventory of land uses in the WLUP Project Area, developed by Port staff and the EIR consultant team. The estimates of land use in 2010 are based in part on the sets of assumptions described in Appendix D. The "net change" shown in the tables represents a combination of new uses occupying currently vacant land or building space, demolition and new development, and new uses occupying land or building space currently devoted to a different use. Under some Alternatives, a net decrease in space devoted to some land use types is shown, reflecting the consolidation and/or replacement of existing land uses.

The use designations for sites in the WLUP Project Area are indicated in terms of uses assumed to be developed or operational in 2010. As indicated above, the Alternatives do not represent "buildout" of all sites in the Project Area. Vacant building space and open land area remain in the Project Area through 2010 in all of the Alternatives as quantified for the EIR. Future vacant space is not specifically identified and does not appear under any particular use designation (the tables show only changes in existing vacant space). To do so would require speculative site-specific assumptions about future vacancy.

The amounts of space devoted to cargo shipping reflect estimated activity levels for the facilities assumed to be in use as marine terminals, rather than the entire area within the boundaries of those facilities. The amounts of space devoted to ship repair reflect assumptions about the location and level of activity. The total amount of space devoted to a cruise terminal relates to the estimated requirements for a two-berth terminal.

The land use tables do not quantify all of the changes that would be allowed by the WLUP. Some of these changes include additional berths for historic ships (acceptable in all subareas); additional ferry and excursion activity at existing or expanded ferry and excursion facilities (all subareas but the Southern Waterfront); additional transportation services (Fisherman's Wharf and Ferry Building subareas); additional parking (all subareas [refer to Sections IV.B., Environmental Setting, Land Use and Zoning, and V.B., Environmental Impacts, Land Use and Growth-Inducing Impacts, for discussions of existing and potential future parking]); additional docks for water taxis (all subareas); temporary and ceremonial berthing (all subareas); additional community facilities (all subareas but South Beach/China Basin); and public access and open space (all subareas). Some of these potential changes are noted in Section V.B., Environmental Impacts, Land Use and Growth-Inducing Impacts. All of these changes will be addressed in the EIR analysis to the extent possible at this time, even though they are not quantified in the land use tables. Potential new Bay fill for water-dependent uses and replacement fill (reconstructed or replaced piers or other pile-supported structures) are discussed in Section V.B., Environmental Impacts: Land Use and Growth-Inducing Impacts, p. 403, and other pertinent impacts sections.

The discussion of the changes in land use by subarea in Section V.B., pp. 396-429, includes a description of the key existing uses that would remain in each Alternative. That description is not meant to cover all of the existing uses that could remain but, rather, is intended to highlight the major uses. Many smaller land uses, including restaurants and small offices, were assumed to remain in all of the EIR Alternatives.

Summary of Net Changes in Land Use by Alternative

Table 2 presents building space and land area added together by type of use in 1995 and 2010, and the net change from 1995 to 2010, for each Alternative. Table 2 also presents information on hotel rooms, residential units, and changes in existing vacant space. The net change for the whole Project Area often reflects a combination of increases in square footage in some subareas and decreases in others.

A comparison of the totals for the three Alternatives indicates that the general land use changes estimated for each Alternative are consistent with the assumptions discussed in Appendix D:

- There is a greater emphasis on local retail activity in Alternative A than in the other two Alternatives, and a greater emphasis on visitor-serving retail activity in Alternative A and (particularly) Alternative B than in the No Project Alternative.
- The level of assembly and entertainment/recreation activity, a use associated with bringing greater numbers of people to the waterfront, is substantially greater in Alternative B than in the other two Alternatives.
- The amounts of warehouse, light industrial and general industrial uses are greater in Alternative A than in the No Project Alternative and substantially greater than in Alternative B, because Alternative A emphasizes interim uses, in which these categories predominate.
- The level of cargo shipping activity is highest in Alternative B, reflecting the assumptions made about growth in maritime activity and full utilization of facilities designated by BCDC as Port priority use areas.

TABLE 2: NET CHANGE IN BUILDING SPACE AND OPEN LAND AREA IN USE, TOTALED, BY USE: 1995 - 2010 BY ALTERNATIVE/a/

	Building Space and Open Land Area/b/			
Land Use	1995	No Project Alternative	Alternative A	Alternative B
Local Retail	132,000	-7,000	+62,000	0
Regional Retail	0	0	+130,000	+160,000
Visitor and Specialty Retail	559,000	+92,000	+180,000	+275,000
A/E/R/c/	0	+79,000	+309,000	+1,225,000
Trade, Promotion Center	0	0	+200,000	+100,000
Office, R&D	837,000	+16,000	-39,000	+234,000
Warehouse, Light Industry	1,051,000	+210,000	+628,000	-495,000
General Industry	1,674,000	0	+776,000	-684,000
Cargo Shipping	3,525,000	+1,152,000	+1,283,000	+9,207,000
Ship Repair	1,243,000	-592,000	-592,000	0
Fishing Industry	188,000	+142,000	+142,000	+149,000
Cruise	206,000	+55,000	+55,000	+55,000
Ferry, Excursion	153,000	+81,000	+81,000	+110,000
Water Recreation	157,000	+29,000	+31,000	+142,000
Maritime Support	923,000	+16,000	+15,000	+26,000
Historic Ships/d/	64,000	0	0	0
Hotel Rooms	0	+125	0	+1,100
Residential Units	310	+80	+230	0
Existing Vacant Space/e/	15,811,000	-1,551,000	-3,966,000	-12,929,000

/a/ This table does not quantify total building space or open land area in the WLUP Project Area. Parking, open space, and public access are not included. Existing parking is summarized in Table 5, p. 115, and existing and potential future parking is discussed in Section V.D., Transportation Impacts, beginning on p. 495. Existing open space/public access comprises about 1,644,000 square feet. In addition, these tables do not include additional berths, ramps, docks, or certain other "water-area" improvements associated with maritime uses. Numbers do not include potential pier removal or change in water coverage. These uses and changes are addressed in the EIR's analysis of impacts.

/b/ In square feet, except for hotel rooms and residential dwelling units. Open land area represents land, exclusive of buildings, used for various types of activities in the Project Area.

/c/ Assembly, Entertainment, and Recreation.

/d/ Additional space for historic ships is not quantified. Under the WLUP, historic ships could occur at one or more of a number of locations within the Plan Area.

/e/ Leasable, unoccupied space in buildings and open land area.

SOURCE: Recht Hausrath & Associates

- The residential development estimated for Alternative A and the hotel development estimated for Alternative B reflect the assumption that Alternative A is oriented more toward local-serving activities, and Alternative B is oriented more toward visitor-serving activities.
- The most existing vacant space is in use in Alternative B, because the Port is assumed to achieve a maximum reasonable amount of commercial development consistent with a broader range of public trust objectives, and the Port's maritime facilities are assumed to be fully utilized, among other factors.

Summary of Changes in Land Uses, by Alternative and Subarea

Table 4 in Section IV.B., Environmental Setting, Land Use and Zoning, p. 114, presents existing building space and open land area by type of land use for each subarea; Tables 24 through 26 in Section V.B., Environmental Impacts, Land Use and Growth-Inducing Impacts, pp. 400-402, present 2010 building space and open land area by type of land use for each subarea, under the No Project Alternative, Alternative A, and Alternative B, respectively.

Height of New Development

This EIR does not analyze specific development proposals for particular sites within the WLUP Project Area; therefore, the EIR Alternatives do not include site- or use-specific assumptions about the height of new development. Development under all Alternatives is assumed to be consistent with existing San Francisco zoning, which generally imposes a 40-foot height limit on piers and seawall lots as discussed in Section IV.B., Environmental Setting, Land Use and Zoning, pp. 124-154.

Open Space and Public Access

The discussion of WLUP policies (see Section III.A.) includes a description of policies related to open space and public access. Figures 23a and 23b, Section IV.B., Environmental Setting, Land Use and Zoning, pp. 159-160, include a map of existing and planned open space and public access areas within the Project Area. The relationship between the planned open space areas and the EIR Alternatives is as follows:

- Underwater World New Perimeter Walk - assumed to occur for all Alternatives;
- Ferry Terminal improvements at the Ferry Building, including a planned breakwater, access piers and Promenade extension - assumed to occur for all Alternatives;
- Islais Creek open space improvements - assumed to occur for all Alternatives;

- Mission Bay/China Basin Channel - development of open space and wetlands by Catellus on parcels within the Project Area is assumed to occur in Alternative B;[3]
- South Beach Park - Phase One development is assumed for all Alternatives; Phase Two development is assumed to occur in Alternative B;
- New open space opportunities associated with new development on piers - assumed to occur in all Alternatives, to the extent such new development occurs;
- Emerging wetlands at Seawall Lot 352 adjacent to Pier 94 - continue to evolve in the No Project Alternative, contained in Alternatives A and B;
- Pier 98 wetlands and India Basin Shoreline Park - assumed to occur for all Alternatives;
- Rincon Point Park - assumed to occur for all Alternatives; and
- Waterfront Transportation Projects - waterside promenade improvements assumed to occur for all Alternatives.

Other specific open space and access projects are shown in Figures 23a and 23b, pp. 159-160.

It is difficult at this point to quantify the open space and public access that would be provided under each of the Alternatives (see the more detailed discussion of open space in Section V.B., Environmental Impacts, Land Use). The WLUP envisions open space and public access as components of most of the types of development allowed by the Plan. Decisions about the amount and type of open space and public access provided as part of specific projects would be made as the projects are being designed.

Fill

Bay fill could be "new fill," that is, a new pier, berth, filled land area, or other Bay cover in a new location, or "replacement fill," that is, replacement or "substantial repair" of existing piers that extend their useful life. Pursuant to the McAteer-Petris Act, BCDC approval would be needed for all such Bay fill proposals. (See Section IV.A., Public Plans, Policies and Regulatory Agencies Setting, especially pp. 95-100, for discussion of how new fill and replacement fill are regulated.) Each Alternative would involve both new fill and replacement fill. The amounts of new fill and replacement fill under each Alternative are difficult to quantify because specific fill amounts would be determined on a case-by-case basis by the Port Commission and BCDC. Nevertheless, estimates of new fill and replacement fill in the Project Area have been made on the basis of land uses and activities assumed for each Alternative (these estimates are presented in Section V.B., Environmental Impacts, Land Use and Growth Inducing Impacts, p. 403, and in other pertinent impacts sections). In general, Alternative B would involve the greatest amounts of new fill and replacement fill.

Parking

The number of parking spaces and locations of parking facilities that would be supplied under each Alternative would depend on several factors. First, policies in the WLUP promote use of public transit, shared parking, and use of existing parking facilities. Second, although accessory parking is considered to be consistent with the public trust, BCDC policy restricts the amount of parking provided on piers, and requires that parking be provided on seawall lots first. Third, the San Francisco Planning Code requirements for parking are based on specific types of land uses, and the WLUP allows several very different types of land uses on most sites. (The demand for parking would vary for the same reason.)

The analysis of transportation and circulation impacts (Section V.D.) includes estimates of Planning Code requirements for parking and the relationship of the requirements to estimated potential parking demand. The transportation and circulation mitigation measures (Section VI.D.) include program-level measures related to parking supply.

For the purposes of EIR analysis, it was assumed for all Alternatives that, where development would occur on a seawall lot, accessory parking would likely be provided as part of that development. Where development would occur on a pier, the supporting parking for that development might be provided on that pier, nearby piers, nearby seawall lots, or at nearby existing facilities. As the "maximum development" alternative, Alternative B would likely involve construction of the greatest amount of parking facilities.

The following general changes in parking facilities were assumed to occur for the EIR Alternatives (primarily for Alternatives A and B):

- The shifting of parking from the Triangle (Seawall Lots 300-301) and Pier 43½ in Fisherman's Wharf to another location, to allow for development of open space and retail uses (with the greatest amount of parking shifted in Alternative B);
- The provision of supporting parking on some piers, including possible use of major portions of a pier for parking that would support the uses on a nearby pier;

- The removal of existing parking facilities on some piers and seawall lots, and replacement with other uses; and
- The continued use of surface parking on some seawall lots, or replacement of the surface lots with parking structures.

Transportation Services

The Draft WLUP defines "transportation services" as "Facilities for land-based, water-borne or intermodal . . . transportation operations, including but not limited to: transit and traffic facilities, areas for ticket sales, passenger information and waiting, bus, automobile, taxi, pedicab and horsedrawn carriage staging areas and pick-up and drop-off zones, and related administrative functions."

The Acceptable Land Use Tables in the Draft WLUP (included in Appendix C) show transportation services as an existing acceptable or new acceptable use in the Fisherman's Wharf and Ferry Building subareas. In the Fisherman's Wharf subarea, there are a number of existing, visitor-oriented transportation services (such as pedicabs and horsedrawn carriages); these services would be allowed to continue under the WLUP. In the Ferry Building subarea, existing transportation services (such as Muni bus connections) are provided at the Ferry Building; expanded or new services would be provided as part of the redevelopment of the Ferry Building, to "maximize convenience of connections between landside and waterside transportation modes." Transportation services provided under the WLUP would build on and incorporate the connections provided by the Waterfront Transportation Projects currently under construction: (1) the MUNI Metro Turnback Project, providing more efficient turnaround of MUNI Metro trains via an underground tunnel which will surface on The Embarcadero near Folsom Street; (2) a MUNI Metro light rail service from The Embarcadero station to the CalTrain station and, eventually, to Mission Bay; and (3) a new MUNI historic street car line (the F-Line) running in The Embarcadero median from the Ferry Building to Fisherman's Wharf.

Space for transportation services has not been quantified for this EIR because the locations and space needs for such services would be determined as part of the design of individual projects or sites. The analysis in the EIR is based on the following, general assumptions about transportation services:

- In the Fisherman's Wharf subarea, there would be more organized public and private transportation services provided as part of Alternative B than as part of Alternative A or the No Project Alternative.

- In the Ferry Building subarea, some transportation services would be provided as part of the Ferry Terminal project (assumptions about that project are discussed earlier in this chapter). Services provided in connection with other development in the subarea would occur as part of Alternative B.

Community Facilities

The Draft WLUP defines "community facilities" as "Public safety and community service facilities, including but not limited to: fire and police stations, postal services, day care, health care, libraries, community meeting rooms, and medical emergency helipad."

Existing community facilities within the WLUP Project Area include, among others, fire stations at Pier 22 1/2 and Pier 92, a helipad at Pier 32, and community meeting rooms in the Delancey Street mixed use development in South Beach. All of these facilities would be allowed to continue under the WLUP. The Acceptable Land Use Tables in the Plan show community facilities as new acceptable uses in the Fisherman's Wharf, Northeast, Ferry Building, and Southern Waterfront subareas; most of the new uses would be permitted in the Ferry Building subarea.

Space for community facilities has not been quantified separately for this EIR, because this category of land use encompasses very different types of facilities with different space needs, and because the WLUP does not identify specific facilities as acceptable or desired in particular subareas. For these same reasons, the Alternatives developed for this EIR do not include specific assumptions about the development of community facilities. Community meeting rooms, to the extent they are included as part of an assembly and entertainment/ recreation or office development, are generally reflected in the space estimates for those land use categories. Because the impacts or issues related to some types of community facilities (such as police station, fire station, library, and helipad) are highly use- and site-specific, this EIR may not address all of the impacts related to those facilities, and additional environmental review might be necessary for specific community facility projects.

VARIANTS ON ALTERNATIVES

Chapter VII of the EIR analyzes the following four variants to the EIR Alternatives:

1. Potential development of a ballpark in the China Basin Mixed Use Opportunity Area, which includes Seawall Lots 335 and 336, the Caltrans site, and Pier 46B. These sites are on both sides of Berry Street, east of Third Street. This variant generally reflects a proposal made by the San Francisco Giants for a ballpark at China Basin. The ballpark would have a maximum of 42,000 seats, and would require an exception to the 40-foot height limit in the area. The ballpark would be a variant to Alternative B. (The discussion of the variant will also consider development of a 22,000-seat sports arena instead of the ballpark at the same site);

2. Removal of certain piers that would be surplus to the needs of water-dependent uses, with the resulting Bay frontage to be reserved as open space. Instead of leaving surplus piers vacant or allowing development of interim uses, the Port would remove the piers altogether. This concept would be a variant to Alternative A;

3. Potential development of an arena and 450,000 square feet of associated entertainment and retail facilities on Rincon Hill. This variant reflects an application filed with the San Francisco Department of City Planning in April 1995. The arena would seat about 22,000, and would be built on a site bounded approximately by Folsom, Harrison, Spear and Beale Streets. Because this project has a filed application and would represent a change to the assumed cumulative context, it is considered a variant to all of the Alternatives; and

4. Potential development of 2,000 multi-family residences and up to 400,000 square feet of urban entertainment retail in an area north of China Basin Channel, in an area between Third and Sixth Streets (outside the WLUP Project Area in the Mission Bay Plan area). This variant generally reflects a potential development under consideration by the Catellus Development Corporation. The residences and retail uses would replace most, if not all, of the office space approved for this area as part of the Mission Bay Plan. Because this project would represent a change to the assumed cumulative context, it is considered a variant to all of the Alternatives.

E. APPROVAL PROCESS

EIR AND WATERFRONT LAND USE PLAN

Publication of the DEIR will be followed by a 45-day public comment period, including a public hearing on the DEIR before the City Planning Commission (the certifying body of the City and County of San Francisco for CEQA purposes). Following the close of the comment period, responses to written and oral comments will be prepared. The Draft EIR, plus the Summary of Comments and Responses document containing instructions for revising the Draft EIR, will serve as the Final EIR (FEIR). The FEIR will be presented to the City Planning Commission for certification as to accuracy, objectivity and completeness. The certified FEIR will be used by the Port Commission in its decisions both on the proposed WLUP and, if the Plan is approved, on projects carried out pursuant to the WLUP. (As described on p. 47, supplemental project-specific environmental review may be required for the latter.) Approval of the WLUP is a separate action from EIR certification, and will include public hearings to be held by the Port Commission.

GENERAL (MASTER) PLAN, PLANNING CODE, ZONING AMENDMENTS

San Francisco General (Master) Plan, Planning Code and Zoning Map amendments necessary to implement the land use policies in the WLUP would be subject to approval by the City Planning Commission and then require enactment by the Board of Supervisors in the form of ordinances, and would require the signature of the Mayor. Proposition H requires that the final WLUP be subject to a public hearing conducted by the City Planning Commission, to ensure consistency between the WLUP and the San Francisco General (Master) Plan.

BCDC

Implementation of the WLUP contemplates amendments to BCDC plans and policies, including the *San Francisco Bay Plan, San Francisco Waterfront Special Area Plan, San Francisco Waterfront - Piers 7 through 24 Total Design Plan,* and *San Francisco Bay Area Seaport Plan.* A general description of these changes is given on pp. 44-46. Although the amendments necessary to reconcile the WLUP with the BCDC plans have not been specifically determined, the WLUP Advisory Board has recommended and the Port Commission has concurred that the general principles and land use options in the WLUP be organized in a format, endorsed by BCDC as well as other entities, to supersede the existing *San Francisco Waterfront Special Area Plan.* The WLUP (Chapter 5, Implementation) identifies several issues that would require further policy development (e.g., the replacement pier policies in the *Bay Plan*). The EIR Alternatives include varying assumptions regarding the potential policy amendments.

BCDC is required to conduct a public hearing on any proposal to amend the policies or maps in the *Bay Plan.* A two-thirds vote is required to make policy amendments to the *Bay Plan,* and a majority vote is required to make nonpolicy amendments. There is a public noticing requirement of 90 days for policy amendments and 30 days for nonpolicy amendments. These procedures must also be followed for amendments to the *Special Area Plan* and *Total Design Plan.* It is anticipated that BCDC would use this EIR in connection with these decisions.

BCDC requires permits for certain activities (including dredging and filling in the Bay and development in shoreline areas) within its jurisdiction. Specific development projects proposed in accordance with the WLUP would be subject to the BCDC permit requirements. The types of

BCDC jurisdiction and criteria for evaluating proposed projects are discussed in Appendix D, Assumptions Used in Development of EIR Alternatives.

BCDC approvals are always evaluated in the context of the McAteer-Petris Act, as well as the plans and policies mentioned previously in this section. Implementation of some WLUP policies might require legislative amendments to the Act (see the following subsection "State Legislative Issues").

STATE LEGISLATIVE ISSUES

Most, if not all, of the land uses identified in the WLUP could be approved by BCDC consistent with the provisions of the McAteer-Petris Act. There is, however, one area of ambiguity in the Act regarding the extent to which existing pile-supported structures could be repaired without triggering water-oriented use requirements imposed on new replacement fill. Under an informal 1986 Attorney General Opinion, pier repairs that could not be characterized as routine maintenance or minor fill could be considered new or replacement fill. This issue potentially could be clarified by BCDC policy determinations. However, BCDC's ability to address these policy issues may be constrained by its authority under the McAteer-Petris Act as interpreted by the Attorney General. The land uses that would be most affected by this policy issue would be non-water-oriented land uses established for interim terms that would require upgrade of a pier, such as a general warehousing use in a former maritime cargo shed.

Based on the Port's experience with development of non-trust uses as part of the South Beach Rincon Point Redevelopment Program, it appears that State legislative authorization might be required for non-trust use of a Port property declared surplus to public trust needs and leased for long-term development (up to 66 years). In order to avoid separate legislative authorization for every proposed non-trust use, the Port may request State legislative action to clarify the intent of the Burton Act regarding the Port's authority to declare properties surplus to public trust needs.

OTHER APPROVALS

As discussed previously, most of the lands within the Project Area are subject to the public trust, under the jurisdiction of the State Lands Commission. The Port of San Francisco, as grantee under the Burton Act, administers its public trust lands, and the State Lands Commission retains oversight authority. The State Lands Commission requires a permit for all dredging projects. Thus, permits from the State Lands Commission would not be required for specific projects carried out under the WLUP that are consistent with the public trust, except for projects that involve dredging. Port tenants would likely seek State Lands Commission approval of long-term leases where substantial improvements are proposed because Commission approval assures the lessee that the State would honor the lease if the trust grant to the Port were revoked. The State Lands Commission would be consulted regarding development of interim non-trust uses on Port property for compliance with the Burton Act and general public trust law. Under the Burton Act, the Port was delegated authority to declare properties as "surplus" to the needs of the public trust. However, development of long-term, non-trust uses on Port property might require authorization from the State legislature (see State Legislative Issues, p. 71).

The Bay Area Air Quality Management District (BAAQMD) requires air quality permits for stationary sources of air emissions and might require air quality permits for construction activities; examples of sources for which permits or permit modifications may be required would be marine terminals and other ship berthing facilities, and light and general industrial operations. No air quality permits would be required for approval of the WLUP.

Similarly, no water quality permits from the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) would be required for approval of the WLUP. For specific projects carried out under the Plan, a National Pollutant Discharge Elimination System (NPDES) stormwater permit (to prevent pollution in runoff) would be required for construction activities involving five or more acres; a separate NPDES permit would be required for projects that would involve non-stormwater discharges. Any new industries with industrial processes located outdoors must comply with the requirements of the RWQCB's General NPDES Permit for Industrial Storm Water Discharges.

The U.S. Army Corps of Engineers would require a Section 404 (Clean Water Act) permit for specific projects involving discharge of fill material into "waters of the U.S.," and a Section 10 (Rivers and Harbors Act) permit for projects affecting navigable waters. The Section 404 permit would be either a Nationwide or Individual permit, depending on the acreage and types of resources affected. Dredging and construction of new docks and breakwaters are examples of projects that are covered under the U.S. Army Corps permit program.

NOTES - Project Description

1 The Draft Plan allows consideration of a proposal by the San Francisco Giants for a ballpark seating more than 22,000, in the South Beach/China Basin subarea. A China Basin ballpark and related uses were approved by San Francisco voters in a March 1996 ballot initiative. See the discussion under the South Beach/China Basin subarea under the subsection "The Range of Acceptable Land Uses by Plan Subarea."

2 See Note 1. A ballpark is the subject of a variant analyzed separately in this EIR.

3 The Mission Bay Development Agreement expired at the end of 1995 and Catellus has indicated it will not renew (i.e., terminate) the Agreement. The Mission Bay Special Area Plan, Planning Code, and Zoning Map provisions remain in effect. At this time the effects of terminating the Development Agreement are not known with respect to the overall Mission Bay program and related agreements (e.g., wetlands development, land exchange with the Port, buildout south of China Basin Channel, etc.). Nevertheless, for purposes of providing a conservative impacts analysis, it has been assumed that buildout of the Mission Bay area according to the Mission Bay Specific Plan occurs.

4 A comprehensive amendment of the San Francisco City Charter, passed by the voters in 1995 and effective July 1, 1996, changed the name of the San Francisco Master Plan to the General Plan.

5 The Zoning Map sheets covering the Project Area include: (1) Use Districts, map sheets 1, 8 and 9; (2) Height and Bulk Districts, map sheets 1H, 8H and 9H; and (3) Special Use Districts, map sheet 1 SU.

6 Memorandum of understanding comprises "Agreement between the San Francisco Bay Conservation and Development Commission and the Port of San Francisco to review Port plans and policies implementing the San Francisco Waterfront Land Use Plan as well [sic] possible amendments to the San Francisco Bay Plan, Special Area Plan, Total Design Plan, and other documents," Port Resolution No. 96-02, March 25, 1996.

7 Agreement between the San Francisco Bay Conservation and Development Commission and the Port of San Francisco to Develop and Process Port Plans and Policies Regarding Uses, Public Access and Urban Design Requirements to the San Francisco Bay Plan, Special Area Plan and other Documents as Necessary to Implement such Policies, the San Francisco Waterfront Land Use Plan and the Policies of the McAteer-Petris Act, March 25, 1996.

IV. ENVIRONMENTAL SETTING

A. PUBLIC PLANS, POLICIES, AND REGULATORY AGENCIES

INTRODUCTION

This section will provide a summary of plans, policies and regulations of the City and County of San Francisco, and regional, State, and federal agencies that have regulatory authority over Port property. The City and County of San Francisco Master Plan and Planning Code and Zoning Map provide the framework within which initial review of development proposals based on the Draft Waterfront Land Use Plan (WLUP) will be considered. Other agencies will have regulatory jurisdiction over various aspects of site-specific development proposals on Port properties, which are expected to follow from adoption of the vision for waterfront development presented in the Draft WLUP.

Planning and regulatory control over Port property is exercised by many governmental agencies. In addition to the Port Commission, there are four bodies of particular importance with respect to land use planning and development issues: (1) State Lands Commission; (2) San Francisco Bay Conservation and Development Commission; (3) City and County of San Francisco Board of Supervisors; and (4) City Planning Commission of the City and County of San Francisco. The U.S. Army Corps of Engineers and the San Francisco Bay Regional Water Quality Control Board also play an important role in regulating Port activities which have a direct impact on the Bay. Each of these will be discussed in this section.

Following this Setting section, a comparison of the land use policies proposed in the Draft WLUP with applicable plans, policies and regulations will be presented in Section V.A., pp. 364-395. The land uses contained in the three EIR Alternatives will be the basis for defining and examining issues and potential conflicts.

The Port of San Francisco

In 1850, when California was admitted to the Union, the State succeeded to title in the tidelands within its border to keep in trust for the people of California. The State, over time, granted authority to oversee specified trust property to various Port Authorities and local agencies throughout the State. The area now known as the Port of San Francisco was governed by a State Harbor Commission until 1968. At that time, the State adopted the Burton Act, which transferred the area to the City and County of San Francisco to be held in trust for the people of California for the purposes of commerce, navigation and fisheries (the "public trust"). The transfer was conditioned on the passage of certain amendments to the Charter of the City and County of San Francisco, which the voters of the City approved in 1968. The transfer was effected pursuant to an agreement entered into between the State and the City, in accordance with the Burton Act, by a document known as the "Transfer Agreement" dated January 29, 1969.[1]

The City and County of San Francisco holds title to Port Property through the Port Commission. However, the State reserves the right to revoke the trust grant, in which case title to the property would revert to the State.

The Burton Act granted the Port broad powers relative to the transferred property. There are, however, three key constraints: (1) property cannot be sold or otherwise transferred into private ownership, unless the State Legislature finds that the property is valueless for trust purposes, is proposed for a beneficial public use, and is a small portion of the total land held in trust by the Port; (2) the properties can be leased for a period not to exceed 66 years; and (3) properties generally must be leased only for trust purposes, and the revenues derived from the operation of the leased property must be maintained in a separate account and used only for trust purposes. A legal mechanism exists that allows the Port Commission to determine that Port property is "not required for Trust purposes." Such surplus land may be exchanged for other property, and/or used for other purposes determined by the Port Commission and the State Lands Commission to be in the public interest. It is also acceptable for the Port to establish short-term leases (i.e., ten years or less) for non-trust purposes, with the revenue being applied to the Trust account.[2]

Under the Burton Act, the Port of San Francisco was designated as Trustee and has been granted the power to manage, operate and administer Port lands, consistent with public trust restrictions embodied in the public trust doctrine of law implemented and enforced by the State, and subject to the laws of the State and the City Charter.

The Burton Act further requires that the City establish a commission to administer and control the transferred property. The Port Commission was established for that purpose by an amendment to the Charter of the City and County of San Francisco.[3] In addition, certain guidelines relating to all City Boards and Commissions which are set forth in the Charter are applicable to the Port Commission.[4] The Commission is responsible for the administrative control of the Port including all real and personal property in the Port's jurisdiction. The Commission consists of five members appointed by the Mayor and subject to confirmation by the City's Board of Supervisors. Each member serves for a term of four years and may be reappointed. The Port Commission holds meetings that are open to the public on the second and fourth Wednesdays of the month in the Commission Room of the Ferry Building. The meetings include public hearings on proposed projects.

The Port is a City agency and works closely with the Planning Department, other City agencies, and the Mayor's office, as well as other regional, State and federal agencies. The Port's property responsibility is approximately 7.5 linear miles of waterfront, adjacent seawall lots, and several inland isolated parcels near 3Com Park at Candlestick Point and the Hunters Point area. Operations specific to Port maritime activities include container, break bulk, passenger, and other terminal operations; fishing; and ship repair. Considerable waterfront recreational and entertainment activity is available, especially in the Fisherman's Wharf area. Approval by the Port Commission is required for all uses and leases (both maritime and non-water-dependent uses) on land under its jurisdiction.

The Port has done extensive economic planning to address the issues of appropriate land uses and development strategies that still will comply with the public trust doctrine. These efforts have included: (1) San Francisco Central Waterfront Economic Adjustment Strategy (1978); (2) Maritime Development Strategy I (1978); (3) Maritime Development Strategy II (1979); (4) San Francisco Container Terminal Modernization Plans (1985); (5) Strategic Plan (1990); and (6) Various Capital Improvement Plans (1983-90). These are the Port's "policy documents." They have functioned as guidelines rather than directives or requirements.

The Port is an enterprise department that neither receives funds from nor gives funds to the City's general fund. However, it is also a department of the City and County of San Francisco; thus, all regulations that apply to any land use in San Francisco also may apply to Port projects, provided those regulations are not in conflict with the Burton Act. Regulations passed by local voter initiative are not directly applicable to the Port. However, to the extent that other City agencies have authority over activities on Port Property, that authority can be affected by local initiative.

Proposition H, which was passed by San Francisco voters in November of 1990, requires development of a waterfront land use plan, bans hotels, and prohibits the approval of any non-maritime land uses on the Port's waterside properties by "any City agency or officer whose exercise of power can be affected by initiative"[5] until such a plan is completed. A City Attorney's opinion has stated that the ability of the Port Commission to approve non-maritime interim uses was not affected by Proposition H (July 13, 1994). While the Port has elected to use the City's Building and Fire Codes, the Port has its own building and fire inspectors and issues its own building permits. It may make interpretations of building and fire regulations that are specific to conditions on Port property and could not be invoked elsewhere in the City. In other instances, such as the review of a proposed project against the applicable San Francisco Master Plan and/or Planning Code or Zoning Map, Planning Department staff will carry out that review and Planning Commission action may be necessary prior to Port Commission approval. These procedures are described below.

In addition to the Port Commission, there are many other agencies that exercise police power, planning and/or regulatory control over proposed developments on Port property. The function and authority of each of these agencies (only as they relate to Port activities) is discussed in the following pages.

LOCAL AGENCIES WITH JURISDICTION OVER PORT LAND USES

City and County of San Francisco

San Francisco Board of Supervisors

The San Francisco Charter provides that the Board of Supervisors has legislative authority to adopt zoning ordinances (in conjunction with action by the City Planning Commission) and to hear appeals on certain decisions made by the City Planning Commission. The Board of Supervisors is required to approve leases of Port property when the income will exceed $1,000,000 per year or the term of the lease exceeds ten years. Specific development proposals on Port lands are subject to applicable provisions of the City Planning Code and Zoning Map.

The Board of Supervisors has police power authority with respect to uses and activities on Port property. Pursuant to the police power, the Board may adopt ordinances affecting health and safety objectives, including land use controls. However, that authority must be exercised in a manner consistent with the obligations assumed by the City upon transfer of the property from the State. The extent of the Board's authority with respect to the Port Commission's authority and Port property is not well settled as a matter of law. When issues arise they are addressed in City Attorney opinions, and occasionally by the courts.

San Francisco City Planning Commission

The Master Plan of the City and County of San Francisco, and the City and County of San Francisco Planning Code (Text and Zoning Maps) are administered by the Planning Department under the direction of the City Planning Commission. These documents are applicable to most proposals for the use of Port land.

The Elements of the Master Plan identify policies and objectives that define the desirable character and types of development for the City. Area Plans included in the Master Plan provide more specific objectives and policies for development in designated areas of the City. Of the ten area plans that are now part of the Master Plan, three include Port property: the Northeastern Waterfront Plan (Aquatic Park to Pier 46); the Central Waterfront Plan (China Basin to Islais Creek), which includes as Part II the Mission Bay Plan; and the South Bayshore Plan (Islais Creek south to below Hunters Point). In addition, many of the other Elements have policies and objectives that would apply to development that may be proposed for Port property. There is also a Redevelopment Plan for Rincon Point-South Beach that includes some Port property along The Embarcadero, approximately between Mission and King Streets.

The Master Plan is implemented in part by the City Planning Code. The Planning Code sets forth specific objective standards that define the range of allowable physical characteristics of proposed development, such as the floor area ratio, the height and bulk of buildings, and the land uses permitted within zoning districts. There are also provisions for the creation of special use districts that overlie the base zoning; at present, there are three special use districts on some Port property. Refer to Section IV.B., Environmental Setting, Land Use and Zoning, pp. 110-161, for detailed descriptions of the various zoning regulations applicable to the Project Area.

The City Planning Commission maintains the traditional municipal planning functions of establishing appropriate land uses through district zoning designations and other development policies and makes administrative determinations on certain types of permit applications. The hearings held by the City Planning Commission provide the City's official forum for review and discussion of future plans and development regulations.

If a proposal on Port land is only for a maritime use, the Planning Commission will not be involved in the decision-making process and the forum for public discussion will be the Port Commission. The Planning Commission has responsibility for the review and approval of proposed mixed-use Port development projects located in the Northern Waterfront Special Use Districts because they will require conditional use authorization (a Planning Commission action) if they involve uses other than those directly related to waterborne commerce and navigation. The Planning Commission does not generally become involved in maritime uses that are sanctioned by the public trust legislation, or most proposed uses located in the M-1 and M-2 zoning districts.

Chapter 31 of the San Francisco Administrative Code assigns the responsibility for California Environmental Quality Act (CEQA) implementation for all Port projects to the Planning Department's Office of Environmental Review. The certification of all environmental impact reports, including those for Port projects, is the responsibility of the Planning Commission.

Master Plan of the City and County of San Francisco. The Master Plan, adopted by the City Planning Commission, is the comprehensive, long-term general plan that contains the land use policies for San Francisco. It is intended that the WLUP be consistent with the Master Plan and that conforming amendments will be proposed for adoption by the Planning Commission to establish this consistency. These will be described and discussed beginning on p. 364.

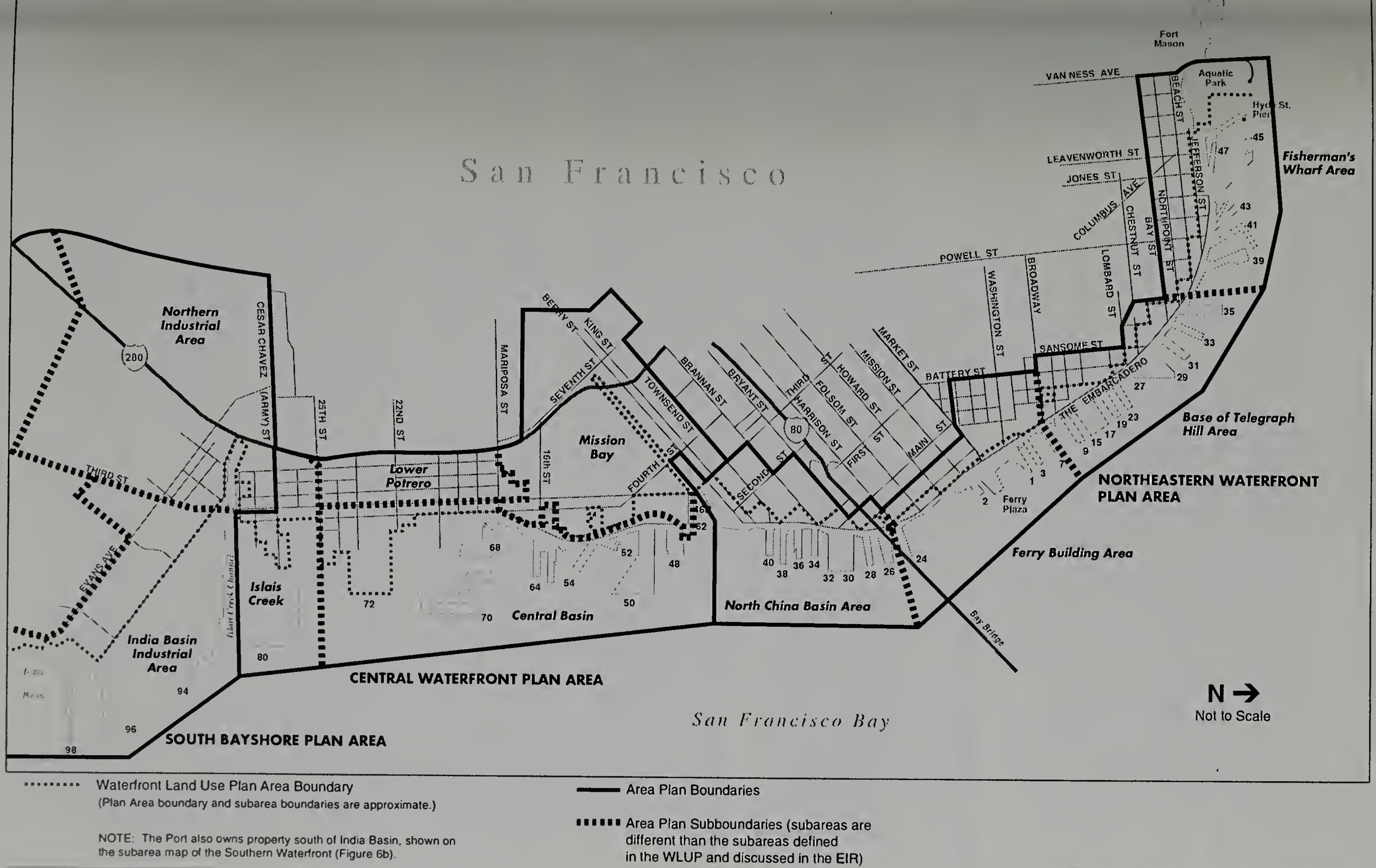
At this time, the official Master Plan of the City and County of San Francisco includes the following Elements: Residence; Commerce & Industry; Recreation & Open Space; Transportation; Urban Design; Environmental Protection, which includes sections that address conservation, transportation noise, energy and hazardous waste; Community Facilities, which addresses police, fire, library, public health centers, neighborhood centers, educational and institutional facilities, and wastewater and solid waste facilities; Community Safety; and Arts. Area Plans have been adopted for Downtown; Civic Center; Chinatown; Rincon Hill; Van Ness Avenue; Western Shoreline; Northeastern Waterfront; Central Waterfront, which includes Part II Mission Bay Plan; South Bayshore; South of Market; and a Land Use Index.

A number of the Area Plans in the Master Plan, and many of the Elements, have goals, policies and objectives that are relevant to the WLUP. The Northeastern Waterfront, Central Waterfront (which includes Mission Bay), and South Bayshore Plans are the Area Plans that provide specific guidance for the Project Area. The land within the boundaries of these Area Plans includes more than Port property. Refer to Figure 7. The following discussion will summarize those sections of the Area Plans that have relevance for the WLUP, as well as any aspects of Elements (examples being Commerce and Industry, Urban Design and Community Facilities) that will be applicable to the WLUP and subsequent proposed projects.

Northeastern Waterfront Plan (adopted 1/19/77, last amended in 7/6/95). The Northeastern Waterfront Plan contains objectives and policies for the area from Aquatic Park to Pier 46B at China Basin Channel. The Plan seeks to contribute to the waterfront's environmental quality, enhance the economic vitality of the Port and the City, preserve the unique maritime character, and provide for the maximum feasible visual and physical access to and along the Bay.

According to this Area Plan, in the Northeastern Waterfront areas where piers are structurally sound, shipping and related maritime uses should be maintained and expanded. On lands no longer needed for maritime purposes, the predominant uses should be open space and water-oriented public recreation. On inland areas, the predominant uses are intended to be residential and office development. The waterfront should be re-integrated with the fabric of the City. The Embarcadero roadway is planned to become a landscaped waterfront boulevard, linking the Northeastern Waterfront with other portions of the shoreline. A rail transit system is planned to run along The Embarcadero, reducing the need for auto travel and on-site parking. Pedestrian and bicycle ways should connect recreational areas with community facilities, historic and architecturally significant buildings, residential areas, and employment centers along and near the waterfront. An authentic maritime character and strong sense of historic continuity, combined with increased visibility of the natural attributes of the Bay, would reinforce the special identity of the area.

To achieve these goals, the Northeastern Waterfront Plan includes general objectives and policies for Land Use, Transportation, and Urban Design, and recommends specific objectives and policies for five geographic subareas: Fisherman's Wharf (which extends from the Municipal Pier at Van Ness Avenue to Pier 35); the Base of Telegraph Hill (Pier 35 through Pier 9); the Ferry Building Area (Pier 7 through Pier 24); the North China Basin Area (Pier 26 through Pier 46); and the Embarcadero Corridor (which extends along the right-of-way of The Embarcadero from north to south and intersects the four other subareas).



NOTE: The Port also owns property south of India Basin, shown on the subarea map of the Southern Waterfront (Figure 6b).

SOURCE: Environmental Science Associates

San Francisco Waterfront Land Use Plan EIR ■

Figure 7
Area Plans of the San Francisco Master Plan that Include Port Property

The overall goal of the Northeastern Waterfront Plan is to create a physical and economic environment which will use the area's resources and potential in a manner that will best serve the needs of the San Francisco community based on the following principles: (1) provide for those uses that positively contribute to the environmental quality and economic health of the Port and the City; (2) preserve and enhance the unique character of the area by taking advantage of the unique economic opportunity provided by San Francisco Bay; and (3) provide the maximum possible visual and physical access to San Francisco Bay while minimizing the adverse environmental impacts of new activity.

The following outline summarizes the general objectives and policies of the Northeastern Waterfront Area Plan:

- General Land Use: Objectives are to maintain economically viable activities, diversify uses, maximize public use of the waterfront, and enhance environmental quality by encouraging revenue-producing uses for the Port; decreasing traffic congestion and encouraging efficient use of transit; and giving priority to development of public open space and Bay-oriented uses within non-maritime development adjacent to, or over, the water.

- Maritime and Industrial: Objectives are to retain viable maritime and industrial activities, reserve as much land as is realistic for those uses, and provide for efficient operation of Port activities by giving priority to maritime activities and prohibiting uses that will preclude future maritime development; continuing existing maritime activities on piers; improving transportation for all types of goods; encouraging retention and expansion of commercial fishing and related industrial activities; and encouraging the Port's maritime operations.

- Commercial: Objective is to develop limited additional office and commercial space of a lesser intensity than in downtown to serve the City's economic needs and encourage a mix of uses and activities by encouraging service retail and limiting general and specialty retail and encouraging some additional Bay-oriented commercial recreation and public assembly uses inland of the seawall.

- Recreation and Open Space: Objective is to strengthen and expand recreation opportunities and develop a system of public open spaces and recreation facilities through developing a system of diverse facilities throughout the entire planning area that serves residents and visitors of all ages and income groups that emphasizes the relationship to the Bay; requiring inclusion of a substantial amount of public open space and peripheral public access to water's edge in any non-maritime development beyond the seawall; providing as much public open space and peripheral access as feasible in areas of maritime/industrial activity; developing a number of berthing accommodations for different types of ships and boats; and creating a continuous bicycle path separated and protected from vehicular traffic where possible and linked to a Citywide bicycle route system.

- Transportation: Objectives are to facilitate the movement of people and goods from the maritime and industrial areas of the City and within the northeastern waterfront and the region so as to minimize the adverse impact of this traffic; accommodate the regional movement of people and goods, through traffic, and access to the regional system from the maritime and other industrial areas of the city; facilitate the movement of regional transit and minimize the adverse impact of this system on the northeastern waterfront area by intercepting and diverting as much traffic as feasible away from the water's edge and intense pedestrian activity so as to increase safety and facilitate the commercial and recreational development of the area; limiting additional parking and discouraging long-term parking and parking near intense pedestrian use areas; encouraging transit use; limiting parking over the water, and prohibiting it if need can be met elsewhere; facilitating pedestrian access to and along the shoreline; moving regional traffic inland when feasible; prohibiting increased capacity of roadway system along the shoreline between the Bay Bridge-downtown area and the Golden Gate Bridge; expanding the operation of passenger ferry systems; and improving transit service.

- Urban Design: Develop the full potential of the area in accord with its relation to the Bay, the operating Port, fishing industry and downtown, and enhance its unique aesthetic qualities offered by water, topography, views of the City and Bay, and its historic maritime character. This will be accomplished by preserving the physical form of the waterfront through controls on building height and mass near the water's edge; establishing design standards for all buildings in the vicinity; preserving and/or enhancing historic and architecturally interesting structures, views, landscaping, pedestrian amenities, public open space, lighting and signage; removing all or portions of dilapidated piers, bulkhead wharves and bulkhead buildings which cannot be reused; and removing exposed surface parking from over water and along The Embarcadero roadway.

Summary of the goals and policies for the subareas:

- Fisherman's Wharf Area (Municipal Pier to Pier 35): Fisherman's Wharf contains portions of the Golden Gate National Recreation Area at Aquatic Park, the National Park Service facility on the Hyde Street Pier, hotels, the maritime museum, restaurants and specialty shops, the reuse of historic buildings for major commercial centers at Ghirardelli Square and the Cannery, Fish Alley, the berthing basin for what remains of the commercial fishing fleet, and the Pier 39 development. Policies for Fisherman's Wharf include: encouraging the retention and expansion of the fishing fleet and the maritime character of the area; placing limitations on the amount and type of new commercial recreational development that may occur; enacting urban design standards for all new development; enhancing and increasing Bay-oriented public open space; and proposing transit and parking improvements to upgrade circulation and reduce congestion.

- The Base of Telegraph Hill Area (Piers 35 through 9): This subarea is characterized by finger piers in break-bulk and cargo-handling uses, and offices, showrooms and warehousing on inland sites. Area Plan policies call for: continuing and enhancing maritime use of Piers 35 through 9 and refurbishing Pier 35 as the City's passenger terminal; encouraging, inland of The Embarcadero, residential, office and open space uses; and preserving buildings of architectural or historic merit. The surface Embarcadero roadway is planned to be improved as a waterfront boulevard extending from Fisherman's Wharf to China Basin with widened sidewalks, truck access areas for the maritime piers, and a right-of-way for the "F" Embarcadero streetcar line. (Partially implemented.) Policies for this subarea include: maintaining maritime and maritime-related activities, including the passenger terminal at Pier 35; retaining the historic maritime and architectural character of the area and ensuring the compatibility of new development with the existing structures; developing diverse additional activities that will expand the period of use and activate the waterfront during evenings and weekends; and addressing traffic and transportation issues.

- The Ferry Building Area Piers (7 through 24): Included in this subarea are the Ferry Building and The Embarcadero roadway. Contrary to previous proposals for extensive bay fill, the Plan calls for open water as a relief to the intensely developed downtown and to ensure the continued prominence of the Ferry Building and its tower. The Ferry Building is to be re-established as a major transit center, the eastern terminus to Market Street, and a major entryway to the City from the water. The Ferry Building would be redeveloped with a mixture of office and commercial recreation uses. Historic ships could be moored in this area and pleasure boats tied up to colorful buoys. A simple, elegant promenade is suggested to link Pier 7 to Pier 24 (partially implemented) to maintain a visual corridor along the water's edge and create a variety of water edge experiences. Policies address the historic rehabilitation and adaptive reuse of the landmark Ferry and Agricultural Buildings and their development as mixed-use projects, including a major transit center, and encouraging the provision of maximum public access improvements and public assembly facilities along the waterside and on other piers.

  South of the Ferry Building, in the Howard to Harrison Street area, policies promote creating a mixed-use activity center comprised of a major water-related, soft-surface public park, a restaurant in the park north of Folsom Street, and public access and fishing areas with dramatic views to the city skyline and out to the Bay. In addition, a terraced European-style hotel inland of the park across the re-routed Embarcadero roadway will ensure both day and nighttime activities for the area.

- North China Basin Area (Piers 26 through 46): South of the Bay Bridge, Piers 26-38 should continue in break-bulk cargo handling (since ceased) and related shipping activities. Piers 42-46A and a portion of Pier 40, which were almost vacant and in unsound condition when the Northeastern Waterfront Plan was adopted, were to be removed. The full service marina and small-boat harbor recommended in the Plan has been completed. Inland of the harbor, a large waterfront park with dramatic views is planned as part of the Rincon Point Redevelopment Area (see discussion of the Redevelopment Plan below, p. 94).

  On inland areas, viable warehousing, industrial uses and historic structures are intended to be retained, and a mixed-income residential community with open spaces and support services has been built, consistent with Northeastern Waterfront Plan policies, where vacant or underutilized property existed. Walkways and bicycle paths combined with small plazas connect the new residences to waterfront activities and other portions of the City. The new community is slated to be characterized by high density, low to mid-rise structures, re-creating the fine-grained fabric of San Francisco neighborhoods and taking advantage of proximity to downtown, a desirable microclimate and the amenity value of the Bay. Policies encouraging housing in this area of the Northeast Waterfront Plan recognize San Francisco's need for new housing.

- Embarcadero Corridor: Policies for this subarea are intended to facilitate the movement of people and goods, improve environmental quality, enhance physical and visual access to the shoreline, and contribute to the continued vitality of the waterfront. Recommendations include the improvement of The Embarcadero as a waterfront boulevard, the creation of a historic rail transit line to serve commuter and recreational users, and changes in the manner in which parking should serve the waterfront and downtown areas. Much of this is being or has been accomplished by The Embarcadero roadway project.

Central Waterfront Plan (adopted 7/3/80, last revisions 7/6/95). The Central Waterfront Plan, as part of the Master Plan, is intended to fulfill a goal of the Commerce and Industry Element calling for diversification of San Francisco's economic base and improvement of industrial and maritime sectors. The plan includes five geographic subareas in Part I: Showplace Square, North Potrero, Lower Potrero, Central Basin and Islais Creek; and Mission Bay in Part II. The Bayside boundaries of the Central Basin subarea, part of Mission Bay, and Islais Creek (see Figure 7, p. 81) include portions of areas covered by the proposed WLUP.

The overall goal of the Central Waterfront Plan is "to create a physical and economic environment conducive to the retention and expansion of San Francisco's industrial and maritime activities, to reverse the pattern of economic decline in the area and to establish a land base for the industrial and maritime components of the San Francisco economy." The plan's objectives and policies are designed to (1) increase employment opportunities for San Francisco's unemployed and underemployed residents; (2) enhance the working environment to stimulate business growth; and (3) improve the area's appearance and attractiveness.

The following outlines the general objectives and policies of the Central Waterfront Plan:

- Land Use: Preserve and promote the Central Waterfront area for San Francisco's industrial activities while developing residential, commercial and recreational uses on surplus land that complement industrial and maritime activities.

- Industry: Retain, expand and protect industrial activity by rehabilitating old structures, developing vacant land, consolidating rail operations, establishing job training, financing programs for new development, and removing overly restrictive city codes related to industry.

- Maritime: Retain and expand existing maritime activities; improve and expand maritime cargo facilities; encourage development of container terminals along the waterfront; and reserve land adjacent to the waterfront for maritime support use.

- Commerce: Provide commercial activities and encourage water-oriented recreational activities at public access points along the shoreline to serve the area's residents and businesses while preventing office development that is not directly related to industrial and maritime activities.

- Residence: Retain existing housing and promote new housing in established residential areas near China Basin Channel, including development of low- and moderate-income units.

- Transportation: Improve Citywide and regional auto, truck and pedestrian access to the Central Waterfront, including extending light-rail service to the area. Repair and maintain streets and sidewalks and provide parking facilities.

- Recreation and Open Space: Provide public access to the waterfront and recreational resources in the area, compatible with industrial and maritime activities.

- Urban Design: Design new development to be compatible with existing topography, limit height and bulk along the waterfront, and protect and create views of downtown and the Bay. Encourage rehabilitation of historical and architecturally significant buildings with reuse potential.

Specific objectives and policies for the Central Basin subarea include the following:

- Expand maritime activity in the Central Basin area. Continue and expand the use of Piers 48 and 50 for general cargo. Maintain a six-acre area inland and adjacent to the piers to provide a cargo backland support area to support maritime uses of these piers. Encourage the retention and promote the expansion of ship maintenance and repair activities at the Bethlehem site which support and strengthen San Francisco's maritime industry.[6]

- Retain and expand industrial uses. Encourage more intensive use of existing industrial land and facilities in locations or for durations which will not foreclose or inhibit development of future container facilities. Assure that any power plant expansion on the Pacific Gas and Electric Company site will provide additional employment and will not adversely affect the environment.

- Improve and expand waterfront recreation. Maintain and improve existing recreational improvements at Warm Water Cove and expand to adjacent waterfront properties. Develop a waterfront picnic area and fishing pier at Twenty-fourth Street. Provide public access along the north side of the Cove and construct a fishing quay at the Bay. Shield the recreation area from surrounding industrial uses by providing attractive landscaping. Improve and expand the existing Agua Vista Park by developing a public beach and waterfront park and a small boat marina, so long as compatible with existing and planned maritime and private ship repair activities. Continue the use of the existing public boat ramp south of Pier 50. If future Port development necessitates, replace it with an equivalent elsewhere on the eastern shoreline.

- Relate the scale of new development to San Francisco's distinctive hill form, to the adjacent waterfront, and to existing development. Minimize blockage of private and public views and maintain, to the extent feasible, sightlines from Potrero Hill to the waterfront and downtown.

Specific objectives and policies for the Islais Creek subarea are as follows:

- The Islais Creek subarea covers Pier 80 and the area inland from the pier to the I-280 freeway. Policies for this subarea focus on expanding maritime activity, retaining and expanding industrial uses, and developing recreational uses along the Islais Creek Channel.

Mission Bay Area Plan. Specific objectives and policies from the Mission Bay Plan (adopted 9/27/90):

- Land Use: Objective is to create a variety of uses in Mission Bay with housing as a high priority by phasing proportional increments of housing and commercial uses, balancing development with open space, and distributing open space throughout the plan area to complement other land uses. Provide for a variety of uses at the water's edge by enhancing the viability and aesthetic quality of adjacent land uses, providing maximum access to and use of the shoreline, and providing adjacent uses that enliven and activate public open space.

- Urban Pattern: Objective is to emphasize in Mission Bay the characteristic San Francisco development patterns which give existing neighborhoods their image and orientation by integrating Mission Bay with surrounding districts and the Bay, and creating a visual and physical access to San Francisco Bay and the China Basin Channel.

- Conservation: Objectives are to take advantage of the unique features of the Mission Bay setting and preserve continuity with the past and preserve notable landmarks and areas of historic, architectural or aesthetic value by emphasizing the special nature of Mission Bay by orienting development and open space around waterways and water features and bringing open space into development areas to maximize enjoyment of the water; retaining and featuring the Third and Fourth Street drawbridges; preserving Fire Station 30; and incorporating the existing houseboat community into the new development.

- New Development: Objectives are to relate the scale of new development to the adjacent waterfront and to existing development by reducing building heights for new development within Mission Bay as development approaches the Bay, and designing and locating new development to preserve significant views from neighboring areas.

- Shoreline Open Space: Objective is to maintain and enhance significant segments of the Central Waterfront, Bay and China Basin Channel shoreline for public access and recreation by providing maximum feasible public access along all shorelines; maximizing the interface between land and water; providing a variety of recreational opportunities along the shorelines accessible to the public; preserving and enhancing the special amenities of the China Basin Channel; and assuring that shorelines, natural areas, parks and recreation facilities are accessible to the physically disabled and the elderly.

- Recreation Opportunities: Objective is to develop parks and open space with landscaping and design features that differentiate kinds of use by providing parks and open spaces for passive and active recreation, and maintaining and improving the quality of the Bay and shoreline areas, including China Basin Channel and its waters.

- Maritime: Objective is to enhance San Francisco's maritime potential by using the existing Port jurisdiction east of Third Street to achieve land transfers compatible with the present Port and regional plans for Port expansion adjacent to its container terminals in the Pier 80-96 area; avoiding actions which may serve to displace desired existing maritime uses at Piers 48, 50 and 54; and developing an open space buffer for noise and visual buffering between maritime activity and abutting housing development to reduce land use conflicts.

South Bayshore Plan (comprehensive revision adopted 7/20/95). The South Bayshore Plan encompasses the area bounded roughly by Islais Creek, US 101, San Francisco Bay, and the San Francisco County line.[7] Overlap with the WLUP is limited to Piers 90 through 98; the waterfront is a relatively small portion of the South Bayshore Plan area. Area plan policies include improving transportation in and through the district; encouraging housing conservation and development and buffering residential uses from industrial uses; revitalizing Third Street; strengthening the role of the industrial areas in the economy of the district, City, and region; and achieving full reuse of Hunters Point Shipyard.

The following San Francisco Master Plan Elements contain policies, goals and objectives pertinent to the implementation of the WLUP.

Commerce and Industry Element (adopted 6/29/78, most recent revisions 9/27/90). The Commerce and Industry Element "sets forth objectives and policies that address the broad range of economic activities, facilities and support systems that constitute San Francisco's employment and service base."[8] The Element's goals are continued economic vitality, social equity and environmental quality. Specific objectives concern major economic sectors, including manufacturing and industry; maritime activities; office and administrative services; neighborhood commercial retailing; government, health, and educational services; and visitor trade. The Element sets forth policies to retain and enhance industrial and maritime activities.

Transportation Element (comprehensive revision adopted on 7/6/95). As it applies to the WLUP, the Transportation Element of the Master Plan[9] addresses regional issues, congestion and transportation management, and the needs of mass transit, pedestrians and urban goods movement. Throughout the document, the revision integrated concepts of waterborne movement of people and freight.

Objectives and policies that directly relate to the WLUP:

- Regional Issues: Objectives are to maintain and enhance San Francisco's position as the hub of a regional, city-centered transit system and as a destination and departure point for interstate and international trips by expanding and coordinating the use of ferries, water taxis and other forms of water-based transportation using the Ferry Building as the main transfer point; encouraging development of a high-speed water transit system from airports to the Ferry Building; enhancing San Francisco as a recreational port destination; upgrading and modernizing port facilities and landside operations to enhance the commercial significance of the Port of San Francisco and other Bay Area ports; and encouraging the use of all forms of water transportation as part of the overall transportation system.

- Vehicle Circulation: Objective is to develop transit as the primary mode of travel to and from downtown and all major activity centers within the region by facilitating and continuing ferries and other forms of water-based transportation wherever possible and including water transportation to major recreational facilities and other heavily attended events.

- Urban Goods Movement: Objective is to create a physical and economic environment conducive to the expansion of San Francisco's industrial, maritime and airport activities by ensuring truck/service vehicle and rail access and egress to these uses through the following policies: providing sufficient curbside and off-street facilities to rail and piers; improving and maintaining intermodal rail freight handling capacity to the Port and other industrial areas by improving bridges and tunnels along the waterfront to accommodate all types of freight rail cargo; enhancing access and circulation between highways, freight facilities and intermodal transfer points on the waterfront for trucks and other service vehicles; and promoting water-based transportation such as freight ferries and waterfront shuttles.

- Parking: Limit and screen from view from public access areas parking facilities over the water, and near the water's edge where such parking interferes with public access.

Urban Design Element (adopted 8/26/71, last amended 9/27/90). This Element guides the physical character and order of the City, and the relationship between people and the environment.[10] It examines four issues: City Pattern, Conservation, Major New Development, and Neighborhood Environment. The design guidelines encompass height, bulk, building form, view corridors and streetscape measures, and are used by the Planning Department to review major development projects. The Urban Design Element is further discussed in Section IV.G., Environmental Setting, Visual Quality and Urban Design, p. 242.

Recreation and Open Space Element (adopted 7/9/87, last amended 5/4/95). The Recreation and Open Space Element identifies "objectives and policies to meet San Francisco's needs for recreation and open space at regional, citywide, and neighborhood levels."[11] The Element includes land use policies, open space requirements, public access and urban design measures for new development in the San Francisco shoreline zone. The shoreline zone "covers the City's entire shoreline but varies in the degree to which it extends inland, depending on the quantity of the existing open space and public recreation facilities in the area and on the amount of new development anticipated."

- Shoreline: Objective is to provide continuous public open space along the shoreline unless public access clearly conflicts with maritime or other uses that require a waterfront location by: assuring that new development capitalizes on unique waterfront location; maintaining and improving the quality of existing shoreline open space; creating a trail around the City that maximizes waterfront access; and providing visual and physical access to the urban waterfront.

On the northeastern and eastern shoreline the objective is to provide more open space along the Bay and public access to the shoreline while maintaining or expanding active maritime uses.

This Element identifies, for Port property, specific land uses in three categories:

- Priority Land Uses: The most important uses of the shoreline should be those providing substantial long-term public benefits that cannot be provided on other sites within the city. Maritime shipping and freight handling facilities, water-related public recreation and open space, commercial fishing, and water-related industries are included in this category.

- Restricted Land Uses: Office, residential, water-related commercial uses such as restaurants, hotels and shops and non-water-related industrial uses are appropriate only in the areas designated in this plan or other components of the Master Plan. Criteria for location are included in the Element.

- Prohibited Land Uses: All developments which do not fall in the previous two categories are not acceptable shoreline land uses. More specifically, industry or commercial uses that are not dependent upon use of the water should not be permitted. Airports and at-grade or elevated freeways should not be permitted. Uses such as these should be located away from the shoreline. Parking, unless it is accessory to a permitted use, should not be allowed at or near the water's edge. Finally, all uses that will adversely affect water quality should be prohibited.

Standards and policies for location, size, and design of open space and public access for all new non-maritime and maritime developments are included in this Element. For example: public access and open space at ground level should be designed for maximum physical and visual contact with the water; maritime uses may substitute overlooks or open space on another part of the shoreline if public access is clearly inappropriate because of public safety considerations or significant use conflicts; size of the open space provided should directly relate to the size of the new development; and water taxi service between waterfront parks should be investigated.

The design standards in this Element generally view the bulkhead buildings, built between 1910 and 1920 to accommodate the breakbulk cargo handling methods of the day, as a wall between the City and the Bay. The Element states that while many of the bulkhead structures are attractive and some of them should remain because of their visual and historic interest, others should be narrowed or removed to open up visual and physical access to the water. Those bulkhead structures that do remain can be visually opened up so they can be seen through and around and public access can be provided through, around and behind them.

The Northeastern and Eastern Shorelines sections of this Element contain specific design standards or policies for the following areas within the Project Area: Aquatic Park-Hyde Street Pier (GGNRA); Fish Alley; Pier 45; Fisherman's Wharf Plaza; Piers 9-35; Pier 7 (recommended project has been completed); Piers 1½, 3, 5; Ferry Plaza; Pier 1, on the existing BART platform, and at the Agriculture building; Rincon Point; South Beach Small Boat Harbor and Park; and Pier 40. Design parameters are specified for the China Basin Channel; Mission Rock Boat Ramp; Pier 54 public boat ramp; Central Basin - Agua Vista Park; Warm Water Cove; Islais Creek; Pier 98; and India Basin.

The San Francisco link of the regional Bay Trail is proposed to traverse the eastern edge of the City along the Bay from San Mateo County to the Golden Gate Bridge. The Recreation and Open Space Element states that the Bay Trail alignment within San Francisco should link the following parks and public open spaces that are in the Project Area:

- India Basin Park (Planned)
- Warm Water Cove
- Islais Creek
- Agua Vista Park
- Mission Bay Wetland & Park (Planned)
- South Beach Marina & Park (Planned)
- Rincon Point Park (Planned)
- Justin Herman Plaza (not on Port land)
- Ferry Plaza (Ferry Service to Marin, East Bay)
- Pier 7 Public Access Pier
- Pier 39
- Aquatic Park

Environmental Protection Element (adopted 5/24/73, last amended 8/17/95). This Element includes the Plan for Conservation, adopted in 1973,[12] the Plan for Transportation Noise Control, adopted in 1974, the Plan for Energy, and the Plan for Hazardous Waste (adopted 8/17/95).[13] The Noise section will address existing and expected noise in the Project Area. The objective of the Conservation Plan is to "achieve a proper balance among the conservation, utilization and development of San Francisco's natural resources" (i.e., the Bay, ocean and shorelines, air quality, fresh water, land, and flora and fauna).

Objective and policies specifically related to the WLUP:

- Bay, Ocean and Shorelines: Objective is to maintain and improve the quality of the Bay, ocean and shoreline areas by cooperating with and otherwise supporting regulatory programs of existing regional, State, and Federal agencies dealing with the Bay, Oceans, and Shorelines; promoting the use and development of shoreline areas consistent with City policies; implementing plans to improve sewage treatment and halt pollution of the Bay and Ocean; and encouraging and assisting private programs to conserve the Bay, Ocean, and Shorelines.

The Energy section of the Environmental Protection Element includes goals to increase the efficiency with which energy is used; diversify the balance of resource supplies to meet energy needs; foster the economic development of energy management services and renewable energy systems; and encourage the participation of community members to carry out city energy programs.

The Hazardous Waste section of the Environmental Protection Element (added August 17, 1995) contains policies that ensure that siting and permitting authorization for proposed off-site hazardous waste storage and/or treatment facilities or facilities expansion adequately protects the public health and provides for effective hazardous waste management and economic efficiency. Policies are also directed toward reduced use of hazardous materials that generate hazardous wastes (source reduction).

After extensive review of State criteria for location of hazardous waste transfer, storage or treatment facilities, the County Hazardous Waste Management Plan directed that such facilities should only be located in San Francisco's Heavy Industrial (M-2) districts. However, not all parts of the heavy industrial district which includes and is adjacent to major portions of the Southern Waterfront subarea are equally suitable. Such attributes as federal ownership, potential landslide hazards, liquefaction and/or subsidence hazards, and other factors reduce suitability for locations of a transfer, storage or treatment facility.

According to the Element, the only remaining hazardous waste treatment facility in San Francisco is located at China Basin. It provides service for ship waste, oil wastes and tank bottom wastes. The recovered oil is sent to a re-refiner and the treated water is transported by truck to the local waste water treatment facility after appropriate testing. Without this treatment facility, sizable quantities of locally generated oil waste would have to be transported and managed outside of San Francisco. This facility also is an important component of San Francisco's regional fair share of hazardous waste facilities.

Community Facilities Element. Fire Facilities (10/9/52); Library Facilities (4/30/53); Public Health Centers (5/12/60); Police Facilities (8/29/74); Neighborhood Center Facilities (1/20/77); Educational Facilities; Institutional Facilities; Wastewater Facilities; Solid Waste Facilities (12/17/87, last amended 9/27/90).

Community Safety Element (adopted 9/12/74). The Community Safety Element provides "for inclusion of geologic and fire hazard concerns in the planning-development process" and "establishing ways to reduce the risk to San Franciscans from geologic and fire hazards."[14] The Element summarizes geologic and structural investigations, and objectives and policies to protect life, preserve the architectural character of buildings, prepare emergency operations and assure sound reconstruction following a major disaster. Fire safety concerns are further discussed in Section IV.K., Environmental Setting, Public Services and Utilities, Fire Protection, which begins on p. 293. Potential seismic hazards of the Project Area are described in Section IV.I., Environmental Setting, Geology, Seismicity, and Soils, beginning on p. 248.

San Francisco City Planning Code and Zoning Map. The City Planning Code, Chapter 11 of the Municipal Code, is the primary statutory mechanism for guiding growth and development in accordance with the Master Plan. The City Planning Code includes text regulating the location of land uses, building size, bulk, dimensions, siting, access and parking, historic preservation, and maps of Zoning Districts. Section 235 of the Planning Code permits establishment of Special Use Districts that provide tailored development controls for areas that have unique land use conditions to be maintained or encouraged. Planning Code and Zoning Map amendments, including any new Special Use Districts, are proposed by Planning Department staff or the Board of Supervisors or property owners for public review, revision and approval by the City Planning

Commission, and final adoption by the Board of Supervisors and Mayor. Refer to Section IV.B., Environmental Setting, Land Use and Zoning, pp. 110-161, for a discussion of the zoning regulations applicable to the Project Area.

In November 1986, the voters of San Francisco approved Proposition M, the Accountable Planning Initiative, which establishes eight Priority Policies contained in Section 101.1 of the Planning Code. These policies are: preservation and enhancement of neighborhood-serving retail uses; protection of neighborhood character; preservation and enhancement of affordable housing; discouragement of commuter automobiles; protection of industrial and service land uses from commercial office development and enhancement of resident employment and business ownership; earthquake preparedness; landmark and historic building preservation; and protection of open space. While Section 101.1 is not applicable to Port Commission or staff actions, it is applicable when Planning Commission or Board of Supervisors decisions are necessary for projects on Port property. Prior to issuing a conditional use permit for any Port project which requires an Initial Study under CEQA or adopting any zoning ordinance, the City Planning Commission is required to find that the proposed project or legislation is consistent with the Priority Policies.

San Francisco Redevelopment Agency

The Rincon Point - South Beach Redevelopment Plan (adopted 1981, most recent amendments 1995). The redevelopment plan for the Rincon Point - South Beach Redevelopment Areas, under the jurisdiction of the San Francisco Redevelopment Agency (SFRA), was adopted in 1981 and 1984.[15] The Rincon Point Redevelopment Area extends roughly from Mission Street to Harrison Street along the waterfront; the South Beach Redevelopment Area extends from Bryant Street to the entrance of the China Basin Channel (see Figure 7, p. 81).

The main objectives of the redevelopment plan are to: (1) remove substandard buildings in order to encourage new private development of mixed-income housing and hotel and commercial employment opportunities; (2) create two new waterfront parks, including a small-boat marina, both of which will complement open space opportunities in the Rincon Hill Plan area; and (3) re-route and improve The Embarcadero.

South Beach Harbor, the small-boat marina south of Pier 40, was completed in 1986. Housing density in the Rincon Point area has been developed at 150 to 300 units per acre, and 85 to 95 units per acre in the South Beach area. Approximately 300 units of housing have been built on Port land. The Plan also calls for neighborhood-serving commercial uses, many of which have been completed.

REGIONAL AGENCIES WITH JURISDICTION OVER PORT LAND USES

San Francisco Bay Conservation and Development Commission

The State's McAteer-Petris Act (California Government Code Section 66600 et seq.) is the enabling legislation that created the San Francisco Bay Conservation and Development Commission (BCDC) in 1965. The McAteer-Petris Act required the Commission to prepare a "comprehensive and enforceable plan for the conservation of the water of San Francisco Bay and the development of its shoreline," and gave BCDC permit authority over development of the Bay and shoreline. This was in response to concern about the effects of piecemeal filling of the Bay that had reduced the size of the open Bay by about one-third and the Bay's wetlands by more than 75 percent between 1849 and 1965. In 1969, the Commission submitted the completed San Francisco Bay Plan to the Governor and the Legislature. The McAteer-Petris Act was subsequently amended to give the Bay Plan the force of law.

The Commission's activities that directly impact Port projects are as follows:

- Regulating all filling, dredging, and changes in use in San Francisco Bay;
- Regulating new development within the first 100 feet inland from the shoreline (area subject to tidal action) band of the Bay to ensure that maximum feasible public access to the Bay is provided;
- Ensuring that the limited amount of shoreline property suitable for regional high priority water-oriented uses is reserved for these purposes. Priority use areas include: ports, water-related industry, water oriented recreation, airports and wildlife areas;
- Pursuing an active planning program to study all aspects of the Bay;
- Administering the Federal Coastal Zone Management Act within the San Francisco Bay segment of the California coastal zone, including the requirement that federal permits be consistent, and federal agency activities be consistent to the maximum practical extent with BCDC's regulatory programs; and
- Participating in the regionwide State and federal program to prepare a Long-Term Management Strategy (LTMS) for dredging and disposing of material dredged from the Bay.

- Preparing, with the Metropolitan Transportation Commission, revisions to the Seaport Plan.

The Bay Conservation and Development Commission is composed of 27 appointed members representing the public and representatives of local, State and federal agencies with a stake in the future of the Bay.[16]

BCDC uses its permit authority to authorize fill or other development activities in four geographic areas: (1) all Bay water areas and some tributaries up to the line of highest tidal action ("Bay" jurisdiction); (2) all shoreline located within 100 feet of the Bay ("shoreline band" jurisdiction); (3) salt ponds and managed wetlands; and (4) Suisun Marsh. BCDC's "Bay" jurisdiction also extends into areas that may be opened to tidal action, e.g., new waterways or canals, and the shoreline band adjacent to any newly created waterways. BCDC has the authority to permit or deny any project in or over the water, or within a 100-foot shoreline band around the Bay (shoreline band permits can only be denied on grounds of failing to provide maximum feasible public access). This includes a substantial portion of Port of San Francisco property.

In order to respond to a legislative directive to provide sufficient lands to accommodate the water-oriented uses identified in the McAteer-Petris Act, BCDC has reserved sufficient land designated as "priority-use" areas which are believed by BCDC to be most suitable for water-related uses. In that way, water-dependent uses can be accommodated largely on existing land, thus avoiding unnecessary filling of the Bay.[17]

Under the provisions of the McAteer-Petris Act, BCDC may approve Bay fill in areas under its jurisdiction only for certain "water-oriented" uses specified in the law or "minor fill for improving shoreline appearance or public access to the Bay."[18] Water-oriented uses include port facilities, water-related industry, bridges, wildlife refuges, and water-oriented commercial recreation and public assembly. Under the Act, housing and office space, two uses for which large areas of the Bay were filled in the past, are not water-oriented uses and are not allowed on any type of Bay fill, including earth or other solid materials, pile-supported or cantilevered structures, permanently moored, floating structures or vessels, or replacement piers or other pile-supported structures. Commercial, residential, office, and other uses located within the 100-foot shoreline band in BCDC's permit jurisdiction area must be designed to provide maximum feasible public access to the Bay.[19]

Proposed land uses and structural changes are governed by policies regarding public access. BCDC can require, as conditions of permits, shoreline public access improvements consistent with a proposed project, such as, but not limited to, pathways, observation points, bicycle racks, parking, benches, landscaping, and signs. As a guideline for how much public access area should be provided by a project, in the past BCDC has often required that the width of the public access strip along the shoreline of the project be equal to or greater than the height of any adjacent structure. However, the actual amount and specific design of public access is determined on a case-by-case basis in consultation with BCDC staff and by action of the Commission. BCDC applies exacting design controls over the site planning and design on projects that come before the Commission to insure that public spaces, amenities, view corridors and publicly accessible activities are maximized.

BCDC regulates dredging in its jurisdiction on the basis of two main policies: (1) dredge spoils must be disposed of by placement on dry land for approved fill projects, or at locations in the Bay approved by the U.S. Army Corps of Engineers; and (2) all proposed waterways and canals must be designed to maintain the stability of any adjacent dikes or fill.

Of primary concern to BCDC is the placement of new "fill" in the Bay for the purposes of new development. The McAteer-Petris Act imposes very strict standards for the placement of fill. Placement of fill may be allowed only for uses that are: (1) necessary for public health, safety or welfare; (2) water-oriented uses, such as water-dependent industry, water-oriented recreation, public assembly, etc.; or (3) minor fill to improve shoreline appearance and public access. Fill must be the minimum necessary for the purpose and can be permitted only when no alternative upland location exists.

BCDC defines fill as the placement of any material in or over the water surface. As interpreted by BCDC on the advice of the Attorney General, "fill" includes not only the placement of new piles or pile-supported structures, but any improvement or repair to existing piles or pile-supported structures that will extend the useful life of the structure. This interpretation has major implications for the Port, because only water-oriented uses are permitted on fill. This could mean that any substantial seismic retrofitting of existing piers or pile-supported structures could trigger the displacement of existing uses on the Port's piers and pile-supported structures if they do not meet the "water-oriented" test. BCDC has the examination of the definition of "fill" in its current work program for amending the Bay Plan, recognizing that the issue requires further consideration.

What constitutes "fill" also is an important consideration with respect to BCDC regulation of dredging and the impact of enforcement of dredging policies on the cost to keep channels and ship berthing areas operable. The San Francisco Bay Plan policies regarding dredging have as their goal the prevention of further sedimentation in the Bay from dredge mud by disposing of the spoils in the following ways: (1) placement on dry land; (2) placement as fill in approved fill projects; (3) barging or piping to suitable disposal sites in the ocean; and (4) if no other alternative is feasible, dumping in designated Bay sites.[20]

The key BCDC planning and land-use control guidelines which apply to proposals on Port of San Francisco lands are embodied in the following documents:

The San Francisco Bay Plan

The San Francisco Bay Plan (Bay Plan), adopted in January 1969 and amended on occasion since that date,[21] is the BCDC policy document that specifies goals, objectives and policies for existing and proposed waterfront land use and other BCDC jurisdictional areas defined in the McAteer-Petris Act.[22] The plan addresses public access to the Bay and the effects of filling and development on the Bay (e.g., water pollution, destruction of marshes and mudflats, air quality and weather modification, and seismic safety of filled lands). The plan concludes that the remaining water volume and surface area of the Bay should be maintained to the greatest extent feasible for the benefit and protection of Bay fish and wildlife. Filling and diking should be permitted only for purposes providing substantial public benefits, and only if there is no reasonable alternative. The Bay Plan also calls for the protection of specific habitats to maintain or increase any species that provides public benefit and to prevent its extinction. The Bay Plan also designates priority use areas reserved for the high-priority water-oriented uses, including Ports, that are defined in the Act.

Within the constraints of the McAteer-Petris Act, the Bay Plan specifies the uses and purposes for which fill may be permitted in various parts of the Bay. From the standpoint of the San Francisco waterfront, the most important uses for which fill could be approved are Port facilities, water-related recreation, Bay-oriented commercial recreation, Bay-oriented public assembly, and minor fill to improve shoreline appearance or public access. In addition, BCDC adopted the Public Access Supplement to the San Francisco Bay Plan in April 1979, which identifies possible public access development sites, appearance and design criteria, and implementation policies.[23] The City's Area Plans, discussed previously in this section, generally conform to the Bay Plan.

The following water-oriented uses are specified in the BCDC Plan: ports, water-related industry, airports, wildlife refuges, water-related recreation such as marinas, boat launching lanes, fishing piers, places of public assembly where people have direct and enjoyable Bay access, shoreline parks, and such water-oriented commercial recreation as restaurants, specialty shops, theaters and amusements.

There are also non-priority uses allowed in the Bay Plan applicable to the shoreline band. The McAteer-Petris Act specifies that for areas outside the priority use boundaries, the Commission may deny a permit application for a proposed project only on the grounds that the project fails to provide maximum feasible public access to the Bay and shoreline. Shore areas not proposed by BCDC for priority uses may be used for any other purpose acceptable to the local jurisdiction, "providing that the development uses the Bay as an asset and in no way affects the Bay adversely." However, because all Port property is also subject to the public trust, uses would continue to be restricted to those which promote navigation, fisheries, maritime commerce, environmental restoration and open space. The long-term development of any non-trust uses on Port property would be very limited and would require State legislative action.

Bay Area Seaport Plan

The Bay Area Seaport Plan, prepared in conjunction with the Metropolitan Transportation Commission (MTC), is BCDC's overall policy for long-term growth and development of the Bay Area's six seaports, including the Port of San Francisco. The Seaport Plan identifies regional trends in cargo-handling, with an emphasis on container shipping, and identifies specific sites at which container and non-container terminals must be preserved, enhanced and/or developed over time. The Seaport Plan is periodically reviewed by the Seaport Plan Advisory Committee, which includes representatives of the ports, as well as MTC and BCDC.

In San Francisco, the Plan identifies several long- and short-term terminal locations. It also identifies the southern waterfront, from Pier 48 to Pier 96, as a "Port Priority Use Area" required to be maintained for port terminal development to satisfy future regional needs.

The Seaport Plan was adopted in 1982, revised in 1988, and was recently comprehensively amended (the update was approved in April 1996). It focuses on marine terminals within or near the six ports in the San Francisco Bay Area and several military bases scheduled to close in the next two years.[24] The Seaport Plan is a cooperative effort of MTC and BCDC that responds to a State law requiring a maritime element for MTC's Regional Transportation Plan,[25] and a regional port development plan for BCDC's Bay Plan (see p. 98). The Seaport Plan calls for city and county governments to institute land use protection for land adjacent to ports, and to achieve the following goals:

- Ensure the continuation of the San Francisco Bay Port system as a major world port and contributor to the economic vitality of the San Francisco Bay Region.
- Maintain or improve the environmental quality of San Francisco Bay and its environs.
- Provide for the efficient use of finite physical and fiscal resources in developing and operating marine terminals.
- Provide for integrated and improved surface transportation facilities between San Francisco Bay ports and terminals and other regional transportation systems.

The Seaport Plan focuses primarily on marine terminals, including those in San Francisco, where the maritime-related transfer of cargo is the primary activity of business entities operating on-shore in the "Port Priority Use Areas." Maritime uses include maritime terminals and directly related ancillary activities, such as container freight stations, transit sheds and other temporary storage; ship repairing; support transportation uses including trucking and railroad yards; freight forwarders; governmental offices related to port activity; chandlers; and marine services. The Seaport Plan policies identify future terminal sites based on projected growth in waterborne cargo for the San Francisco Bay Area and the estimated capacity of existing Bay Area marine terminals. The plan also outlines necessary improvements to channels, roads and rail systems serving port areas and discourages any local, State and federal actions that will impede access to the marine terminal sites identified.

BCDC is considering major amendments to the Seaport Plan. A Seaport Planning Advisory Committee has recommended changes to various Seaport Plan findings, policies, and priority use designations (including port priority and marine terminal location designations) affecting the Port of San Francisco as well as other Bay Area ports. Proposed changes are being considered at BCDC public hearings, with adoption of the changes possible in 1996.[26]

San Francisco Waterfront Special Area Plan

The *San Francisco Waterfront Special Area Plan* (1975, as amended) indicates acceptable land uses in much greater detail for San Francisco's waterfront than is found in the regional Bay Plan. It contains location-specific recommendations for future land uses, both in text and map form, for most of the waterfront, from Aquatic Park to India Basin. It specifies which uses may be allowed on new or replacement fill for each pier. In this Special Area Plan, uses are allocated to specific piers.

The Special Area Plan is an amendment to the Bay Plan,[27] not a substitute for either it or the McAteer-Petris Act; any proposed development must be consistent with the McAteer-Petris Act, the Bay Plan and the Special Area Plan. These three documents prescribe rules for maritime and non-maritime development along the San Francisco waterfront. This plan was intended to function as a guide for public agencies and private parties seeking BCDC permits by identifying what fill, dredging or changes in use appear to be consistent with the McAteer-Petris Act and the Bay Plan.

The Special Area Plan generally provides for continuing commercial fishing, ferry terminals and other maritime uses in the Fisherman's Wharf subarea. It recognizes the area from Pier 35 through Pier 9 as a maritime use area, calling for a design plan for this part of the waterfront when maritime use is phased out. The Ferry Building area, from Pier 7 through Pier 24, is generally designated for commercial recreation and public access, recreation and open space. Piers 26 through 30-32 are designated for mixed use as maritime use is phased out. A mix of maritime, commercial recreation and public access and recreation is prescribed for the South Beach area. From China Basin south, the Plan generally calls for port uses in accord with the Bay Plan and Seaport Plan.

The Special Area Plan makes general policy recommendations to the City Planning Commission and the Port of San Francisco, including the following: (1) as of April 1975, City height and bulk limits should not be exceeded on any waterfront developments; (2) the entire San Francisco waterfront should be linked by a continuous pedestrian-bicycle path; (3) public open space should be provided on existing piers when there is a substantial change from maritime to non-maritime use; (4) transportation and parking recommendations (some of which are out-of-date) are included; and (5) older buildings of architectural merit or historic significance along the waterfront should be retained.

San Francisco Waterfront Total Design Plan

The *San Francisco Waterfront Total Design Plan* (adopted January 1980) is a part of the Special Area Plan that contains a more detailed series of specific design and public access recommendations for the development of Piers 7-24 only (in the northern waterfront). Developed as a joint planning effort of the City Planning Department, Redevelopment Agency, and the Port, it is consistent with the objectives and policies of the BCDC Special Area Plan and the City Planning Commission Northeastern Waterfront Plan and was adopted by the Port Commission and endorsed by the City Planning Commission in January 1980.[28]

San Francisco Bay Regional Water Quality Control Board

The San Francisco Bay Regional Water Quality Control Board (RWQCB) operates under authority delegated to it by the Federal Environmental Protection Agency and the State Water Resources Control Board. The RWQCB is the local enforcement agency for the Federal Water Pollution Control Act and the State Porter-Cologne Water Quality Act and has primary regional responsibility for water quality protection and enhancement of beneficial uses of San Francisco Bay. One of the RWQCB's principal functions is to regulate discharges into the Bay, such as outflows of the City's wastewater treatment facilities. With respect to the Port, the RWQCB regulates discharges, or potential discharges, associated with activities on Port property. RWQCB permits and approval would apply to certain individual construction activities or discharges into Bay waters that may be proposed within the Project Area. No RWQCB permits or approvals would be required for the WLUP.

Bay Area Air Quality Management District (BAAQMD)

The Bay Area Air Quality Management District has primary responsibility for the attainment and maintenance of air quality standards in the San Francisco Bay Area. Regulation of air quality is carried out through enforcement of both federal and State ambient air quality standards and emissions limits for individual sources of air pollutants. The Project Area, within the City and County of San Francisco, is under the jurisdiction of the BAAQMD. As required by the California Clean Air Act, BAAQMD has published a Clean Air Plan (CAP) applicable to the Project Area. California has adopted specific ambient standards that are more stringent than the federal standards for certain criteria air pollutants. To operate most new or modified stationary sources (e.g., commercial bakeries, auto painting facilities, manufacturing activities) of air pollution in the Bay Area, application must be made for an Authority to Construct with the

BAAQMD in order to subsequently receive a Permit to Operate. Specific facilities in the Project Area which could require BAAQMD permits include marine terminals and other ship berthing facilities, and general industrial operations. No BAAQMD permits or approvals would be required for the WLUP.

STATE AGENCIES WITH JURISDICTION OVER PORT LAND USES

California State Lands Commission

California became the owner of all lands underlying navigable waterways within the State, including tidelands, when it was admitted to the Union in 1850.[29] Most of those lands are still owned by the State or the legislature's public grantees under jurisdiction of the State Lands Commission (SLC). Port lands are State sovereign lands held in trust by the Port of San Francisco for the people of the State of California pursuant to the Burton Act and 1968 Transfer Agreement (see p. 75). The public trust doctrine of the California Constitution defines allowable uses of submerged lands and tidelands as "commerce, navigation and fisheries, recreation and preservation of those lands as ecological units." State Attorney General Opinions and the Courts have, over the years, shaped the public trust doctrine and applied law of public interest uses.

For non-maritime projects that involve long-term leases, a formal review will always be requested by the Port or the prospective tenants to assure that the State would honor the lease in the event the trust grant were to be revoked by the State. The SLC may assess a project's physical development program, economic assumptions, and economic benefit to insure that the Port maintains its role in promoting the public trust doctrine. Past rulings have determined that several uses do not comply with the public trust doctrine, including housing and certain commercial uses such as non-maritime office space and private health clubs.[30]

The position of the SLC is that use of sovereign lands must be consistent with the provisions of the Burton Act, the 1968 Transfer Agreement, and the public trust.[31] Sovereign lands may be exchanged for other lands if certain conditions can be met, pursuant to Public Resources Code Section 6307. The Port of San Francisco, as grantee, will have a role in determining those conditions with the SLC as part of the overall process. The lands so exchanged will have to be found by the SLC and Port to be no longer available or useful for public trust purposes; the value of the lands received in exchange will have to be equal to or greater than the value of the lands given up; and the exchange will have to be in the best interests of the State. The SLC and the

Port will work together with the landowner of record to determine the feasibility of any such exchange.[32]

California Department of Fish and Game

The California Department of Fish and Game's (CDFG) overall objective is "to maintain all species of fish and wildlife for their intrinsic and ecological values, as well as for their direct benefits to man."[33] Under Section 1601-03 of the California Fish and Game Code, Stream Alteration Agreements, the Port must obtain an agreement from CDFG for any alteration to a stream bed channel, or the flow of waters in a channel, if the stream or channel has significant wildlife values. The Department has concerns for protection and enhancement of the quality of the fish and wildlife habitat provided in the Bay, the China Basin Channel, and the Islais Creek Channel, and is charged with protection of State-listed threatened and endangered species under the California Endangered Species Act.

Under the Federal Fish and Wildlife Coordination Act of 1958, CDFG will review permit applications to the U.S. Army Corps of Engineers if any are required for a project such as dredging, and the Agency will participate in any review and permitting procedures required by BCDC.

FEDERAL AGENCIES WITH JURISDICTION OVER PORT LAND USES

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (COE) is the primary federal permit authority for projects in or affecting navigable waters of the United States. The Federal Rivers and Harbors Act of 1899 defined navigable waters as those suitable for commercial transport. Section 404 of the Federal Clean Water Act of 1972 and other legislation widened the definition of navigable waters to include rivers, coastal waters, adjacent wetlands, lakes, intermittent streams and low-lying areas behind dikes along the coast. The regulatory authorities and responsibilities of COE are based on the following laws: Sections 9 and 10 of the Rivers and Harbors Act of 1899, which regulates diking, filling or placement of structures or work in or affecting navigable waters of the U.S.; Section 404 of the Clean Water Act of 1972, which regulates disposal of dredged or fill material into the waters of the U.S.; and Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, which regulates the transportation of dredged material for purposes of disposing of it in ocean waters. Primary objectives of these regulatory activities are to maintain navigability of waters, to protect and enhance water quality and biological resources, and to limit filling of wetlands.

For a proposed project within its jurisdiction, the Corps conducts a "public interest review" by soliciting comments on permit applications through a public notice process. Several agencies have specific review and comment responsibility for Corps-permitted projects: among them are BCDC, RWQCB, California Department of Fish and Game, State Lands Commission, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Coast Guard, and National Marine Fisheries Service. The Corps will review development proposed under the WLUP that involves structures or dredging within the channel area or on the Bay shoreline, or proposed discharges of dredged material into U.S. waters. Water quality, navigation, protection of water edges, flood protection and aquatic habitats are some of its concerns.

U.S. Coast Guard

The Coast Guard's primary responsibility is to preserve and enhance the navigability and safety of navigable waters of the United States.[34] Under Section 9 of the Rivers and Harbors Act, the Coast Guard has permitting jurisdiction for bridges over navigable waters, including the two drawbridges on China Basin Channel at Third Street and Fourth Street and the drawbridge on Third Street at Islais Creek. These drawbridges are operated and maintained by the San Francisco Department of Public Works under Coast Guard operating regulations. Modifying the bridges, or construction of a new bridge, will require a Coast Guard Bridge Permit.[35]

The Coast Guard operates utility and patrol boats to respond to crime, fire and distress calls in the Bay and at sea. The Coast Guard's emergency response roles are further described in Section IV.K., Environmental Setting, Public Services and Utilities, pp. 293-306. The Coast Guard also has the authority to require safety measures, such as navigation lights or channel markers, within navigable waterways, but does not directly issue a permit for waterway safety. It instead participates in the Corps of Engineers Section 10 permit process with particular concern for water safety and navigability. The Coast Guard must authorize any other proposed aids to maritime navigation, through approval of a Private Aids to Navigation Application.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Services (FWS) does not have direct permit authority, but influences decisions on fish and wildlife habitat through its role as a commenting agency to Corps of

Engineers permit applications. Under the Fish and Wildlife Coordination Act of 1958, FWS must be consulted on federally funded, licensed or permitted projects. The Federal Endangered Species Act of 1973 requires federal and State agencies and private applicants to consult with FWS when a project might jeopardize the habitat of listed endangered or threatened species.

The primary concern of FWS will be the effects of Port proposals on migratory birds and water quality in Islais Creek, India Basin, China Basin Channel and San Francisco Bay. The FWS will also comment on applications to the San Francisco Bay Regional Water Quality Control Board, the Corps of Engineers and, where applicable, BCDC permit applications.

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) is the primary federal agency involved in regulating hazardous materials and hazardous wastes. The responsibilities of the EPA with regard to hazardous wastes are described in Appendix H, Hazardous Materials Regulatory Framework.

National Marine Fisheries Service

The National Marine Fisheries Service (NMFS) reviews federally permitted projects that have the potential of altering aquatic environments and thereby affecting biological resources that depend upon those habitats. Habitats and habitat conditions of concern in San Francisco Bay generally include water quality, seasonal wetlands, salt marshes, mudflats, shallow-water areas, eelgrass beds, and areas known to support commercial or recreational fishing interest. Along the seven-and-one-half miles of the WLUP Project Area, few such natural habitat areas remain (see Section IV.A., Biological Resources).

Under circumstances in which habitat/resource damages can be compensated, exceptions to an NMFS policy may be allowed. The following conditions are required for such exceptions: (1) incorporation of all feasible measures to eliminate or minimize adverse environmental impacts; (2) adoption of an acceptable combination of habitat restoration, enhancement or off-site acquisition to compensate for adverse environmental impacts that cannot reasonably be eliminated by project modification; and (3) post-project habitat value equal to or greater than pre-project habitat value.

The NMFS discourages waterfront activities that do not require waterfront access to function efficiently, that discharge sediments or contaminated substances into the Bay, that suggest obvious, direct or indirect adverse impacts to fish resources, or that suggest a cumulative adverse impact to fish resources when combined with similar activities in the Bay.

NOTES - Public Plans, Policies, and Regulatory Agencies

1 Official Statement - Revenue Refunding Bonds, Series 1994, Port Commission of the City and County of San Francisco.

2 Ibid., page 27.

3 Reference to establishment of Port Commission - enabling legislation.

4 Reference to the Charter Section that governs operations of Boards and Commissions.

5 Text of Proposition H Ordinance, Section 2.d - Land Use Planning Process. Proposition H applies only to the portion of the Port's property which is located over or in the water or within 100 feet of the shoreline. Although not required under Proposition H, the Port expanded the scope of the Plan to encompass all Port property.

6 Backland is the area inland from container cranes where containers can be stored.

7 San Francisco Department of City Planning, South Bayshore Plan of the Master Plan of the City and County of San Francisco, originally adopted by the City Planning Commission, Resolution 6486, February 19, 1970; extensively revised and amendments adopted 7/20/95.

8 San Francisco Department of City Planning, *Commerce and Industry Element of the Master Plan of the City and County of San Francisco*, adopted by the City Planning Commission, Resolution 8001, June 29, 1978. Amended by Resolution 12040, September 27, 1990.

9 San Francisco Department of City Planning, *Transportation Element of the Master Plan of the City and County of San Francisco*, amendments adopted July 1995.

10 San Francisco Department of City Planning, *Urban Design Element of the Master Plan of the City and County of San Francisco*, adopted by the City Planning Commission, Resolution 6745, August 26, 1971.

11 San Francisco Department of City Planning, *Recreation and Open Space Element of the Master Plan of the City and County of San Francisco*, adopted by the City Planning Commission, amended 1994.

12 San Francisco Department of City Planning, *Environmental Protection Element: Plan for Conservation of the Master Plan of the City and County of San Francisco*, adopted by the City Planning Commission, Resolution 7020, May 24, 1973.

13 San Francisco Department of City Planning, *Environmental Protection Element of the Master Plan of the City and County of San Francisco*, Plan for Transportation Noise Control, adopted by the City Planning Commission, Resolution 7244, September 19, 1974.

14 San Francisco Department of City Planning, *Community Safety Element of the Master Plan of the City and County of San Francisco*, adopted by the City Planning Commission, Resolution 7241, September 12, 1974.

15 San Francisco Redevelopment Agency, *Rincon Point - South Beach Redevelopment Plan*, adopted by the Board of Supervisors, Ordinance No. 14-81, January 5, 1981; and Ordinance No. 50-84, January 23, 1984.

16 Information provided by BCDC in a handout (overview, accomplishments) available to the public.

17 See Seaport Plan, a joint document of the Metropolitan Transportation Commission and San Francisco Bay Conservation and Development Commission, *San Francisco Bay Area Seaport Plan* 1982, revised 1996, which covers the Ports of San Francisco, Oakland, Encinal Terminal (Alameda), Richmond, Benicia and Redwood City.

18 San Francisco Bay Conservation and Development Commission, *San Francisco Bay Plan* adopted January 1969, July 1979 as amended.

19 Ibid., p. 27.

20 Ibid., p. 15.

21 Major amendments to the Plan occurred in 1979.

22 McAteer-Petris Act, 1965 California Government Code Section 66605(a).

23 The supplement does not specify every area along the Bay shoreline where public access may be required by the BCDC; it is a very general set of guidelines.

24 The Ports are San Francisco, Oakland, Encinal Terminal (Alameda), Richmond, Benicia and Redwood City.

25 Metropolitan Transportation Commission, Regional Transportation Plan for the Nine-County San Francisco Bay Area, November 1985, revised and submitted biennially in November of even-numbered years to the California Transportation Commission.

26 San Francisco Bay Conservation and Development Commission, "Recommended Changes to Port Priority Use and Marine Terminal Designations" for Seaport Planning Advisory Committee consideration, October 28, 1994.

27 San Francisco Bay Conservation and Development Commission, *San Francisco Waterfront Special Area Plan*, adopted April 1975 as amended.

28 City and County of San Francisco, *Total Design Plan Pier 7 through Pier 24*, January 1980.

29 California State Land Commission, "The Public Trust - Your Rights to Enjoy California's Waterways," brochure. In 1850 the federal government granted "swamp and overflow" lands to California. The SLC has the authority to conduct a title inventory to determine the extent of State fee-owned lands and to sell, lease or otherwise encumber those lands in the public's behalf. All of the lands retained by the State must be administered for the public benefit.

30 Attorney General Memorandum (re: general office space), authored by Nancy Alvarado Saggase, dated December 1, 1982; Letter from Attorney General (re: housing) to Claire Dedrick, State Lands Commission, dated September 13, 1984; Letter from State Lands Commission (re: health clubs) to Port of San Francisco, dated August 11, 1988.

31 Port of San Francisco "Official Statement" to refinance Port Revenue Bonds, 1994.

32 Burton Act, as amended, 1988; authorizes the Port to exchange land under these conditions subject to State Lands Commission approval.

33 California Department of Fish and Game, *California Fish and Wildlife Plan*, January 1966.

34 In its *Bridge Permit Application Guide* (1985), the Coast Guard generally defines "navigable waters" as follows: "Navigable waters of the United States for bridge administration purposes are, in general, waters subject to tidal influence, waterways that have a history of substantial commercial navigation, waterways that presently have commercial navigation, and waterways that are susceptible to commercial development." The legal definition of navigable waters is found in 33 CFR 2.05-25(a).

35 U.S. Coast Guard, *California Drawbridge Regulations: Governing the Operation of Drawbridges Across Navigable Waters of the United States in California*, April 1986.

B. LAND USE AND ZONING

PROJECT AREA CHARACTERISTICS

The Port of San Francisco controls about 630 acres (27.5 million square feet [sq. ft.]) along San Francisco's waterfront that extends over a linear distance of seven and one-half miles from just west of the Hyde Street Pier on the north to India Basin on the south. The acreage cited above does not include The Embarcadero roadway or any other streets and roads under Port jurisdiction, which total about 100 acres. The Waterfront Land Use Plan (WLUP) divides the Port's jurisdiction into five subareas: Fisherman's Wharf - 37.2 acres (1.6 million sq. ft.) with the linear boundaries extending from the swimming club docks at the east end of Aquatic Park, near the foot of Hyde Street, eastward to Pier 35½ on the east side of Pier 39 near Kearny and North Point Streets; Northeast Waterfront - 60.4 acres (2.6 million sq. ft.) from North Point and Kearny Streets on the north to Broadway on the south (Pier 35 to Pier 7, inclusive); Ferry Building - 17.4 acres (0.8 million sq. ft.) from Broadway on the north almost to Harrison Street on the south (Pier 5 bulkhead building up to but not including Pier 22½); South Beach/China Basin - 135.3 acres (5.9 million sq. ft.) from a point between Folsom and Harrison Streets on the north to Mariposa Street, including Mission Creek Channel (Pier 22½ to Pier 64, inclusive); Southern Waterfront - 379.6 acres (16.5 million sq. ft.) from Mariposa Street south to India Basin (Pier 68 to Pier 98, inclusive). The Project Area also includes 6.7 acres (0.3 million sq. ft.) in additional parcels near 3Com Park at Candlestick Point and four piers in Hunters Point Naval Shipyard. Figure 1, on p. 13, shows the entire WLUP Project Area with each of the subareas indicated. Maps of the Project Area for each subarea, showing generalized existing land use, are located at the beginning of each discussion of the subareas later in this section.

Property in the Project Area can be characterized as being of two distinct types: waterside and landside. Waterside property is generally designated as "piers." Many people think of piers as being long, narrow structures that extend into the Bay -- the classic "finger piers," originally designed to accommodate berthing of ships and loading/unloading of passengers and cargo. Although, technically, piers are defined as a pile-supported structure over water, the designation applies to a range of structures including "marginal wharves," which are pile-supported but do not extend into the Bay as do finger piers; rather, marginal wharves are constructed parallel to the shoreline or sea wall and are generally located between the finger piers. Usually these marginal wharf facilities have designations of "½." Thus, Pier 1½, which is located between Pier 1 and Pier 3. Other waterside facilities clearly function as piers but are not pile-supported, such as Pier 80 and Pier 94-96. Piers 80 and 94-96 are the Port's container terminal facilities and were constructed on landfill; they contain considerable "backland" facilities such as rail lines and container cargo storage areas as well as berths and loading/unloading areas. The subarea maps contained in this section show the range of shapes and sizes of facilities designated with pier numbers.

Landside property in the Project Area generally consists of filled land known as seawall lots. Seawall lots also have Assessor's Block designations. Appendix B contains a cross-reference of seawall lots and Assessor's Blocks. This EIR text and maps uses seawall lot designations, consistent with the WLUP (except for six parcels near 3Com Park at Candlestick Point in the Southern Waterfront subarea, which are designated with Assessor's Parcel Numbers).

Waterside property under Port jurisdiction, which includes 58 named piers, represents about 55 percent of the Project Area. These facilities range in size from marginal wharf Pier 23½, the smallest, at about 6,000 sq. ft., to Pier 80, the largest at 2.8 million sq. ft. (though Piers 94-96 together have about 3.5 million sq. ft.).

Landside property, the seawall lots, consists of parcels ranging in size from 2,800 sq. ft. to 2.1 million sq. ft. Generally, the Fisherman's Wharf, Northeast Waterfront, and Ferry Building subareas are characterized by smaller parcel sizes compared with the South Beach and Southern Waterfront subareas.

Table 3 shows, for each subarea, the subarea's size, number of buildings, building footprint area, space within the buildings, and open land area. The open land area plus the building footprint area equals the size of the subarea. The open land area plus the space within the buildings equals the space available for land uses. The amount of leasable/usable space in the Project Area totals about 29 million sq. ft. Another 4.3 million sq. ft. is comprised of street rights-of-way.

Project Area land uses are contained not only in building space but also on open land area, particularly cargo shipping, general industry, ship repair, maritime support, and public access/open space. Open land area also contains appurtenant areas around buildings containing various other kinds of uses. About 12.9 million sq. ft. of open land area in the Project Area is vacant (although some is used for open space/public access and therefore not available for other uses), about 60 percent of the total 21.7 million square feet of open land area. About 2.9 million sq. ft. of the existing 7.2 million sq. ft. in buildings in the Project Area is vacant, about 40 percent of total existing building space.

TABLE 3: SUBAREA SIZE AND SPACE SUMMARY (square feet except "Buildings")

Subarea	Subarea Size /a/	Buildings	Building Footprint /b/	Building Area /c/	Open Land /d/
Fish. Wharf	1,620,000	77	830,000	1,160,000	790,000
NE Waterfront	2,630,000	25	1,580,000	1,950,000	1,040,000
Ferry Building	760,000	11	300,000	550,000	460,000
S.Beach/C.Basin	5,890,000	58	1,580,000	1,590,000	4,320,000
S. Waterfront	16,540,000	99	1,550,000	1,930,000	14,990,000
TOTALS	27,440,000	270	5,840,000	7,180,000	21,600,000

/a/ Area of the subarea.
/b/ Total area covered by buildings in the subarea.
/c/ Total space inside buildings.
/d/ Total area not occupied by buildings.

SOURCE: Recht Hausrath & Associates

Overall, about 20 percent of land in the Project Area is covered with buildings. The Northeast Waterfront subarea is the most built up, with 60 percent building coverage. The Southern Waterfront is the least built up, with 9 percent building coverage. The other subareas range from 23 percent (South Beach/China Basin) to 39 percent (Ferry Building subarea) building coverage.

Buildings in the Project Area are predominantly low to moderate scale. Buildings typically are one or two stories, although many cover a large area, with an occasional three-story or higher building. Piers are typified by many pier sheds fronted by pierhead and bulkhead buildings along The Embarcadero. Height of bulkhead buildings and to the peaks of the shed roofs is typically about 33 feet; the pierhead buildings are typically about 50 feet high. The Ferry Building is a notable exception, with a tower height of 240 feet. On the Southern Waterfront, container loading structures and a grain tower are much taller than typical waterfront buildings.

PROJECT AREA LAND USE OVERVIEW

Each subarea's land uses are described in more detail on pp. 119-161. As an overview, the Southern Waterfront is industrial in character, including cargo shipping and ship repair as well as general industrial uses. South Beach/China Basin is predominantly maritime industrial, with some general industrial uses and a small amount of office space and residential/retail uses and a marina in the South Beach Redevelopment Area. The area south of China Basin Channel is more industrial in character. These two subareas contain many empty, and some decaying, piers and large tracts of vacant land. The Ferry Building subarea is dominated by office space and retail uses, along with ferry terminal space. The Northeast Waterfront subarea is characterized by cargo shipping, cruise and excursion terminal and maritime support uses, with some warehouse/light industry, on the waterside, and office uses and parking lots on the landside seawall lots. The Fisherman's Wharf subarea is characterized by visitor-serving retail uses, with fishing industry and excursion boat uses on the waterside and one office building on the landside.

Recent, under construction, and planned major public improvements have and will have substantial effects on future land use trends along the waterfront north of China Basin. In particular, The Embarcadero, the waterfront's "main street," is being transformed into a landscaped urban boulevard with light rail transit. New streetcar trackage has been or will be placed along The Embarcadero from Fisherman's Wharf to King Street; the F-Line historic streetcars will eventually run between Castro Street and Fisherman's Wharf via Market Street and The Embarcadero and MUNI Metro streetcars will surface to serve The Embarcadero south of Folsom Street to King Street before traveling King to about Fifth Street. Options for a continuous light rail line from Fisherman's Wharf to King Street are being studied. For a description of other projects affecting the WLUP area, refer to Chapter III, Project Description, pp. 53-58.

Table 4 shows vacant and in use building space and open land area for each subarea. Table 5, p. 115, gives a summary of existing land uses in the WLUP Project Area and the five subareas, showing the amount and distribution of building space and open land devoted to various uses for each subarea. Table 5 also provides the amount and percentage of existing water-dependent uses versus non-water-dependent uses. Table 6, p. 117, provides a summary of area used for open space and public access.

For purposes of EIR description and analysis, standardized land use categories were developed. A detailed list of these categories and the specific types of uses included in each is given in

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TABLE 4: EXISTING VACANT AND IN USE BUILDING SPACE AND OPEN LAND AREA, BY SUBAREA

Subarea	Vacant	In Use	Total /a/	Vacancy Rate
	Building Space			
Fisherman's Wharf	262,000	895,000	1,157,000	23%
Northeast Waterfront	264,000	1,684,000	1,948,000	14%
Ferry Building	205,000	343,000	548,000	37%
South Beach/China Basin	717,000	1,251,000	1,968,000	36%
Southern Waterfront	1,450,000	472,000	1,922,000	75%
GRAND TOTAL	2,898,000	4,645,000	7,543,000	38%
	Open Land Area /b/			
Fisherman's Wharf	501,000	287,000	788,000	64%
Northeast Waterfront	265,000	770,000	1,035,000	26%
Ferry Building	184,000	278,000	462,000	40%
South Beach/China Basin	2,883,000	1,442,000	4,325,000	67%
Southern Waterfront	9,080,000	5,905,000	14,985,000	61%
GRAND TOTAL	12,913,000	8,682,000	21,595,000	59%

/a/ From Port of San Francisco and RHA Waterfront Plan Project Area land use inventory estimates of total facility (land) area, total.

/b/ Open land area in use includes about 915,000 square feet of land in public access/open space use (which is not included in Table 5). Vacant open land area includes about 729,000 square feet of public access and open space. As a result, the vacancy rate for open land area is overstated, particularly in the Fisherman's Wharf and South Beach/China Basin subareas.

SOURCE: Recht Hausrath & Associates

Appendix C and summarized in Table 1, p. 59. Briefly summarized, 19 land use categories have been used, of which 11 are considered non-water-dependent and 8 are considered water-dependent. The non-water-dependent uses include Retail uses, including restaurants and personal services, which have been divided into three categories, Local Retail (neighborhood-serving), Regional Retail (large-scale), and Visitor and Specialty Retail; Assembly/Entertainment/Recreation (A/E/R), which includes event facilities, exhibition halls, amusement parks, conference facilities, museums, auditoriums, theaters, and public recreation facilities; Wholesale Trade/Promotion Center, which includes facilities for wholesale storage, display, sales and demonstrations, and marketing services; Office/Research and Development, including

TABLE 5: WATERFRONT PLAN PROJECT AREA BUILDING SPACE AND OPEN LAND AREA BY USE AND SUBAREA, 1995

	Building Space by Subarea					
Land Use	Fisherman's Wharf	Northeast Waterfront	Ferry Building	South Beach/ China Basin	Southern Waterfront	Total Project Area
Local Retail	0	0	1,000	81,000	5,000	87,000
Regional Retail	0	0	0	0	0	0
Visitor & Specialty Retail	336,000	26,000	59,000	12,000	0	433,000
A/E/R /b/	0	0	0	0	0	0
Trade, Promotion Center	0	0	0	0	0	0
Office, R&D	136,000	471,000	171,000	48,000	11,000	837,000
Warehouse, Lt. Industry	11,000	432,000	14,000	175,000	279,000	911,000
General Industry	0	0	0	0	21,000	21,000
Parking	310,000	0	85,000	2,000	0	397,000
Hotels	0	0	0	0	0	0
Housing	0	0	0	310,000	0	310,000
Cargo Shipping	0	247,000	0	6,000	93,000	346,000
Ship Repair	0	0	0	288,000	61,000	349,000
Fishing Industry	81,000	33,000	0	50,000	0	164,000
Cruise	0	206,000	0	0	0	206,000
Ferry, Excursion	16,000	2,000	13,000	21,000	0	52,000
Water Recreation	0	0	0	19,000	0	19,000
Maritime Support	0	267,000	0	239,000	2,000	508,000
Historic Ships	5,000	0	0	0	0	5,000
TOTAL THESE USES	895,000	1,684,000	343,000	1,251,000	472,000	4,645,000
Hotel Rooms	0	0	0	0	0	0
Residential Units	0	0	0	310	0	310

	Open Land Area by Subarea /a/					
Local Retail	0	30,000	8,000	5,000	2,000	45,000
Regional Retail	0	0	0	0	0	0
Visitor & Specialty Retail	22,000	4,000	9,000	91,000	0	126,000
A/E/R /b/	0	0	0	0	0	0
Trade, Promotion Center	0	0	0	0	0	0
Office, R&D	0	0	0	0	0	0
Warehouse, Lt. Industry	0	140,000	0	0	0	140,000
General Industry	0	0	0	310,000	1,343,000	1,653,000
Parking	115,000	322,000	109,000	347,000	100,000	993,000
Hotels	0	0	0	0	0	0
Housing	0	0	0	0	0	0
Cargo Shipping	0	122,000	0	54,000	3,003,000	3,179,000
Ship Repair	0	0	0	304,000	590,000	894,000
Fishing Industry	5,000	0	0	19,000	0	24,000
Cruise	0	0	0	0	0	0
Ferry, Excursion	34,000	39,000	28,000	0	0	101,000
Water Recreation	19,000	0	0	119,000	0	138,000
Maritime Support	3,000	83,000	0	161,000	168,000	415,000
Historic Ships	59,000	0	0	0	0	59,000
TOTAL THESE USES	257,000	740,000	154,000	1,410,000	5,206,000	7,767,000

(Continued)

TABLE 5: WATERFRONT PLAN PROJECT AREA BUILDING SPACE AND OPEN LAND AREA BY USE AND SUBAREA, 1995 (Continued)

	Total Building Space and Open Land Area by Use and Subarea/a/					
Land Use	Fisherman's Wharf	Northeast Waterfront	Ferry Building	South Beach/ China Basin	Southern Waterfront	Total Project Area
Non-Water-Dependent Uses						
Local Retail	0	30,000	9,000	86,000	7,000	132,000
Regional Retail	0	0	0	0	0	0
Visitor & Specialty Retail	358,000	30,000	68,000	103,000	0	559,000
A/E/R /b/	0	0	0	0	0	0
Trade, Promotion Center	0	0	0	0	0	0
Office, R&D	136,000	471,000	171,000	48,000	11,000	837,000
Warehouse, Lt. Industry	11,000	572,000	14,000	175,000	279,000	1,051,000
General Industry	0	0	0	310,000	1,364,000	1,674,000
Parking	425,000	322,000	194,000	349,000	100,000	1,390,000
Hotels	0	0	0	0	0	0
Housing	0	0	0	310,000	0	310,000
Water-Dependent Uses						
Cargo Shipping	0	369,000	0	60,000	3,096,000	3,525,000
Ship Repair	0	0	0	592,000	651,000	1,243,000
Fishing Industry	86,000	33,000	0	69,000	0	188,000
Cruise	0	206,000	0	0	0	206,000
Ferry, Excursion	50,000	41,000	41,000	21,000	0	153,000
Water Recreation	19,000	0	0	138,000	0	157,000
Maritime Support	3,000	350,000	0	400,000	170,000	923,000
Historic Ships	64,000	0	0	0	0	64,000
TOTAL THESE USES	1,152,000	2,424,000	497,000	2,661,000	5,678,000	12,412,000
Hotel Rooms	0	0	0	0	0	0
Residential Units	0	0	0	310	0	310
Non-Water-Dependent Uses	930,000 (81%)	1,425,000 (59%)	456,000 (92%)	1,381,000 (52%)	1,761,000 (31%)	5,953,000 (48%)
Water-Dependent Uses	222,000 (19%)	999,000 (41%)	41,000 (8%)	1,280,000 (48%)	3,917,000 (69%)	6,459,000 (52%)

NOTE: This table does not quantify total building space or land area in the Waterfront Plan Project Area. Water areas are not included. Open space and public access are not included. See Table 3, p. 112, for estimates of existing vacant building space and open land area. See Table 6 for public access/ open space uses.

/a/ Open land area represents land, exclusive of buildings, used for various types of activities in the project area. The square footages may include some public access/open space areas associated with the primary land uses indicated.

/b/ Assembly, Entertainment, Recreation

SOURCE: Recht Hausrath & Associates and the Port of San Francisco

TABLE 6: EXISTING AND PLANNED OPEN SPACE/PUBLIC ACCESS AREAS IN THE WATERFRONT PLAN PROJECT AREA

Subarea	Existing Open Space/Public Access/a/	Planned Open Space/Public Access/a/	Embarcadero Promenade (part of road right-of-way area)/a/
Fisherman's Wharf	259,000	0	0
Northeast Waterfront	67,000	0	170,000
Ferry Building	178,000	237,000	0
South Beach/China Basin	288,000	558,000 /b/	147,000
Southern Waterfront	852,000	719,000	0
Total	1,644,000 or 38 acres	1,514,000 or 35 acres	317,000 or 7 acres

/a/ In square feet.

/b/ Includes about 470,000 square feet at Seawall Lot 337 to have been developed as part of the approved Mission Bay project, in doubt now that the Mission Bay Development Agreement has been terminated.

SOURCE: Port of San Francisco

large and small business space and professional services, maritime offices (though some may need to be close to water-dependent uses to function), and educational institutions of all kinds (academic, cultural, business, technical, fine arts, etc.); Warehouse/Light Industrial, which includes non-maritime distribution and storage facilities, home and business service activities, and live-work space; General Industry; Parking; Hotel; and Housing.

Water-dependent use categories are Cargo Shipping, including terminals, berths, rail and truck access, and warehousing and other support services; Ship Repair; Fishing Industry, including commercial and sport fishing facilities; Cruise, comprising facilities for large, generally long-distance passenger cruise vessels; Ferry, Excursion Boats, and Water Taxis, including waterborne transportation such as commuter ferries and short-term excursions such as sightseeing, dining and on-board entertainment; Water Recreation, including recreational boating and water sports facilities; Maritime Support, comprising ancillary functions needed to support maritime activities; and Historic Ships, including display and interpretive areas.

Substantial areas are dedicated to open space, parks, or public access in the Project Area as shown in Table 6, p. 117, and illustrated in Figures 23a and 23b, pp. 159-160. Approximately 38 acres of the Project Area are used for open space/public access (roughly 8 percent of the total open land area). This figure includes area dedicated for public access or open space purposes as part of a BCDC permit requirement. An additional 35 acres of the Project Area are planned for open space or public access uses, including restoration of wetlands along China Basin channel (uncertain now that the Mission Bay Development Agreement has been terminated) and at Pier 98 (11 and 17 acres, respectively), the 4.5-acre Rincon Park in the Ferry Building subarea and the second phase of South Beach Park.

An additional 7 acres of Bayside pedestrian promenade improvements were recently constructed along The Embarcadero, which are considered to be part of the road right-of-way portion of the Project Area. Construction of the Mid-Embarcadero roadway and open space improvements will complete the Bayside pedestrian promenade along The Embarcadero and create a public plaza between the Ferry Building and Market Street; the amount of net additional public open space/ public access associated with that project will be determined with its final approval.

Because land use calculations were made to serve a number of different purposes, dedicated open space/public access areas shown in Table 6 are not included in a consistent way in the land use tables in this section. Of the 1,644,000 square feet of open space/public access in the Project Area, about 915,000 square feet are included in Table 4, p. 114, as Open Land Area in use; the other 729,000 square feet are included in Table 4 as Open Land Area vacant. The 915,000 square feet account for the difference between the Open Land Area in use totals in Tables 4 and 5. Table 5, p. 115, includes no open space/public access area (because Table 5 is the basis for measuring quantified changes to land uses under the Alternatives shown in the Land Use Impacts section, and quantifying future potential open space/public access is not possible, as explained in the Section V.B., Environmental Impacts: Land Use, p. 405).

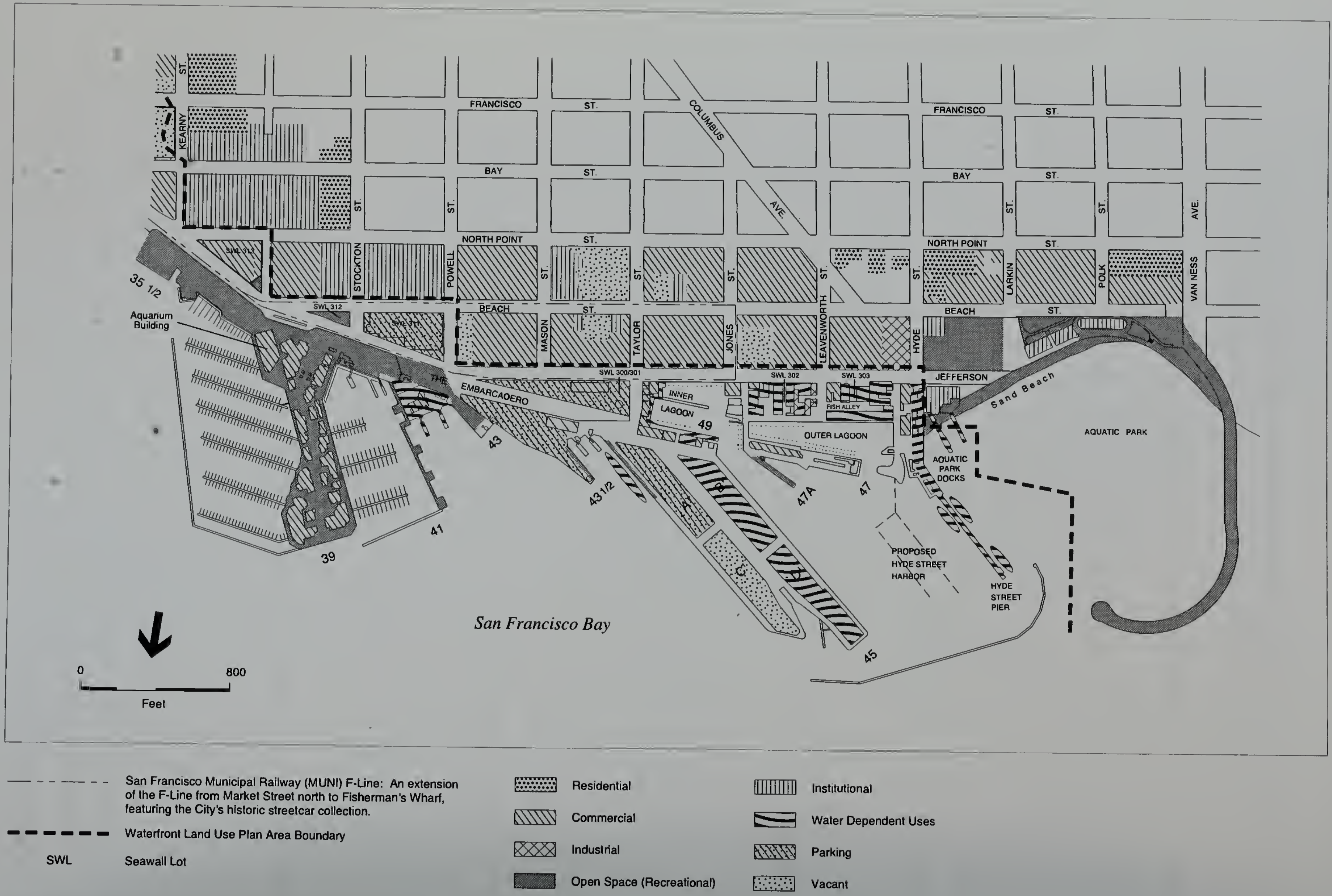
This section of the EIR describes the existing character of the land uses in each of the five subareas. The analysis is not on a site-by-site basis; rather, it looks at aggregated existing uses. The land uses are presented at a general level of detail appropriate for an understanding of existing conditions, as context for the later discussion of potential general land use impacts that could be generated by the WLUP. Tables 4 and 5, which summarize the existing building and open area land uses and the amount of vacant facilities and/or land, should be referred to as accompaniment for each subarea discussion.

FISHERMAN'S WHARF SUBAREA

This subarea extends from the west side of the Hyde Street Pier, including the swim club docks at Aquatic Park, and is inclusive of Pier 35½ near Kearny and North Point Streets. Lands in the Project Area include piers, shoreline, waterfront extending bayward to the U.S. Pier Head Line, the underground seawall along The Embarcadero roadway; and on the landside, all seawall lots (see Figure 8). The Fisherman's Wharf subarea includes seven seawall lots totaling 10.3 acres, and 13 named piers (including eight finger piers) and docks which total 26.9 acres. Space in buildings in the subarea totals almost 1.2 million sq. ft.; another 790,000 square feet is in open land area. About 895,000 sq. ft. of the building space is occupied and in use; about 23 percent is vacant. About 257,000 sq. ft. of the open land area is occupied and in use; another 259,000 sq. ft. of open land contains public open space/public access areas.

Figure 8 shows generalized land use in the subarea and adjacent areas. Primary activities in the Fisherman's Wharf subarea include visitor-oriented retail shops and restaurants, which comprise about one-third of the subarea's leased space; parking (most of which is in the Pier 39 parking garage), which takes up 37 percent of leased space; and water-dependent uses, which comprise about 222,000 sq. ft. of the subarea's 1.2 million sq. ft. of leased space, or about 19 percent. The visitor-serving and retail and restaurant uses are concentrated in three areas: the Pier 39 specialty retail/restaurant/entertainment complex, the north end of Taylor Street, and along the north side of Jefferson Street west of Mason Street. These areas also contain activities oriented toward visitors, such as street vendors and performers, that are not represented in formal land use categories and amounts because they are located in public spaces. The area includes 136,000 sq. ft. of office space, mostly within one seawall lot office building.

Activities that are related to water-dependent use in the subarea include fish handling; fishing boat berthing and operations; the San Francisco Maritime National Historical Park and its berthed historic ships; recreational boating (350 berths at Pier 39 marinas); supporting parking; maritime offices; excursion and ferry boat operations; and Port-owned docks for two swimming and boating clubs on the eastern edge of Aquatic Park (under San Francisco Recreation and Park Department jurisdiction), which has a beach and swimming area. Water-dependent uses comprise 19 percent of the leased space in buildings or open land area in the subarea. Many of the water-dependent uses also occupy a substantial amount of water area.



SOURCE: SMWM, 1995

San Francisco Waterfront Land Use Plan EIR ■

Figure 8

Fisherman's Wharf Subarea:

Public open space in the subarea totals about 258,000 square feet, concentrated on and around Pier 39 and the Hyde Street Pier. Most of the piers have some public access areas. See Figure 23a, p. 159, for a map of public access/open space areas.

Historically, until the 1950's, Fisherman's Wharf was primarily an industrial area with commercial fishing, manufacturing, warehousing and maritime firms, with some seafood restaurants, surrounded by small-scale residential uses. This pattern has changed dramatically over the last 40 years. The visitor-oriented seafood restaurants have been joined by a range of retail uses oriented toward tourists. Pier 39 and along Jefferson Street are the primary visitor-serving retail centers in the Project Area, although there are many other visitor-serving retail establishments throughout the subarea. Bay cruise and tour boat operations are a major activity. An aquarium at Pier 39 is expected to open in spring 1996.

Most industrial activities have disappeared from the area except for the fishing-related facilities at Fish Alley and Pier 45 and the adjacent harbor, and minor historic ship repair activities at the Hyde Street Pier. Repair of earthquake damage to the Pier 45 fish handling and processing facilities has been recently completed and a number of improvements for the fishing industry are planned or underway. Project-specific environmental review for a proposal that would include the construction of additional berths for fishing boats adjacent to the Hyde Street Pier, more extensive harbor improvements than presently exist, and a Fisheries Center Complex on Pier 45, is contemplated (refer to Section III.C., Project Description, EIR Approach, "Relationship to Other Related Projects," pp. 53-58, for more information). Despite a recent general downturn in the fishing industry caused by economic and environmental factors, the Wharf remains home to the Bay Area's fishing fleet and fish handling industry. This industrial use includes wholesale buying and selling of fish, fish filleting, and sorting and distribution for local and regional consumption. About 20 million pounds of fish - crab, salmon, herring, shrimp, squid, abalone, mackerel, halibut and sole - come through the Port annually, although the majority of fish handled (recently estimated to be 90+ percent of the yearly total) at the Wharf is transported in and out by truck. A substantial amount of fish trading occurs on Jefferson Street in the very early morning hours (4:30 A.M. to 7:00 A.M.), before tourist activities take over the area.

Today the Fisherman's Wharf subarea is the most popular destination for visitors to San Francisco, and Pier 39 is the third most visited tourist attraction in the United States, after Disneyland and Disney World. At the same time, the area has maintained a viable fishing industry and other water-oriented uses. Activity levels are relatively high in the subarea, beginning in the very early morning when the fishing industry activity peaks, and extending through the day and evening as people visit the area's many attractions and enjoy sweeping Bay vistas. Summers and weekends are particular peak periods for visitors to the area.

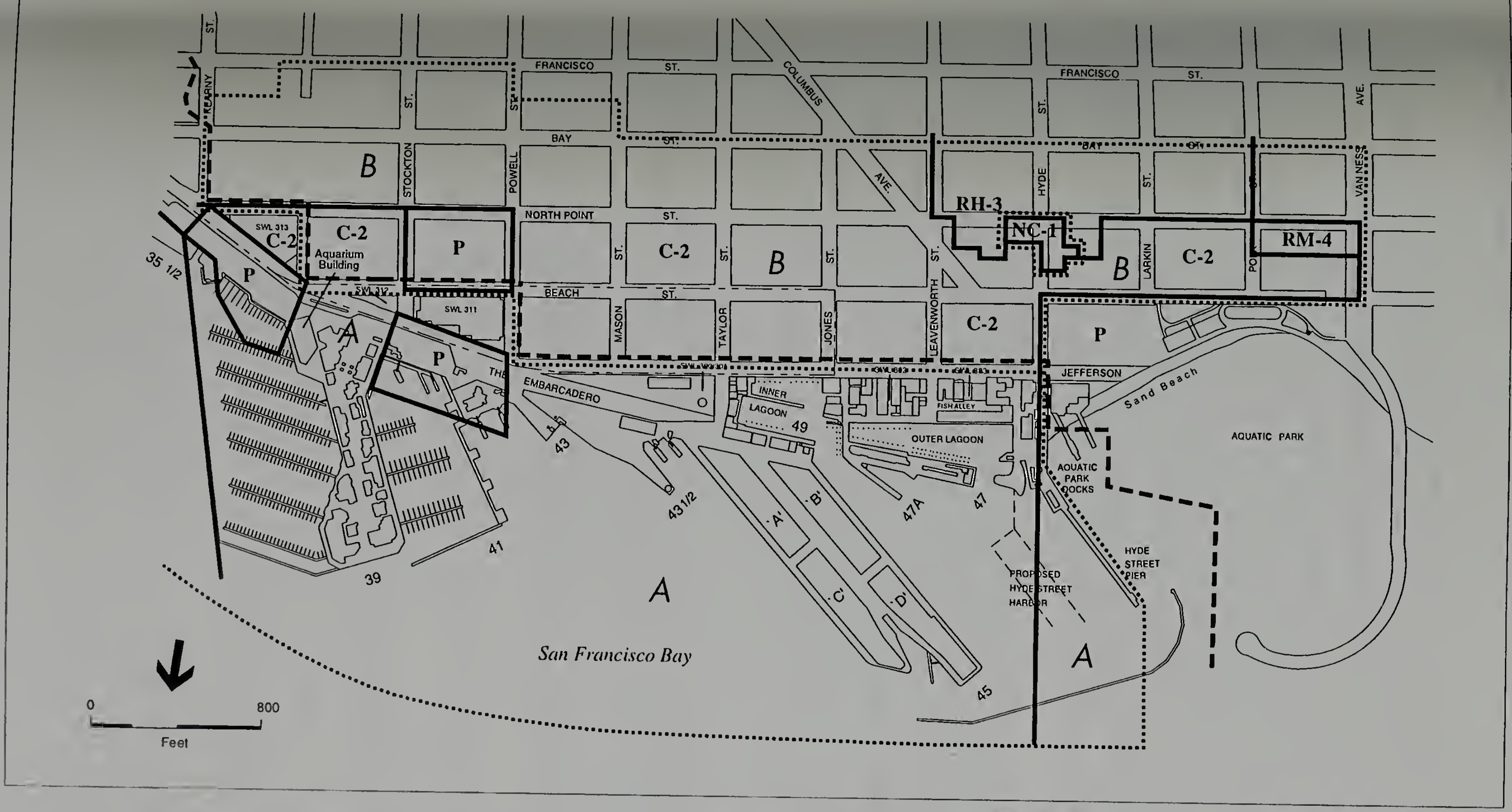
Land Uses in the Vicinity

Uses of land adjacent to the Project Area include the Maritime Museum at Aquatic Park, Ghirardelli Square and the Cannery specialty and visitor retail center, smaller scale specialty/visitor retail on the south side of Jefferson Street and along Taylor Street, the Anchorage Shopping Center, over 3,000 tourist hotel rooms, parking facilities, offices, neighborhood commercial, the MUNI Kirkland Bus Yard facility, a low-income housing project, and market rate housing units (primarily south of Beach Street and west and east of Columbus Avenue). The area has become one of the most visited tourist attractions in the United States, offering cable car access to entertainment, restaurants, art galleries, museums, historic ships, parks, beaches and swimming areas, shops, hotels, offices and housing.

Zoning

The Fisherman's Wharf subarea is located in a C-2 (Community Business) zoning district, which encompasses most of the larger area north of Bay Street to the piers (see Figure 9). However, the C-2 district is overlain by the Northern Waterfront Special Use District No. 1, described below. Per Section 210.2 of the City Planning Code, C-2 districts serve several functions. They provide convenience goods and services to residential areas of the City, both in outlying sections and in closer-in, more densely built communities. In addition, some C-2 districts provide comparison shopping goods or services on a general or specialized basis to a Citywide or regional market area, complementing the main area for such types of trade in downtown San Francisco. A relatively wide variety of goods and services is permitted compared with other Neighborhood Commercial districts.

In a C-2 District, professional and business offices, retail business and personal services, medical offices, schools, assembly and entertainment uses, and residential uses are permitted as principal uses. Hotels, motels, hospitals and medical centers, open-air auto sales lots, animal hospitals or clinics, and wholesale and storage uses are conditional uses, permitted only upon authorization of the City Planning Commission through its conditional use process. Two areas adjacent to Pier 39 are zoned P, a Public Use District that applies to land that is owned by a governmental agency and is in some form of public use, including open space.



San Francisco Municipal Railway (MUNI) F-Line: An extension of the F-Line from Market Street north to Fisherman's Wharf, featuring the City's historic streetcar collection.

Waterfront Land Use Plan Area Boundary

SWL Seawall Lot

Zoning Boundary

Special Use Districts Boundary

ZONING DISTRICTS

C-2 Commercial Districts

NC-1 Neighborhood Commercial Districts

P Public District

RM-4 Mixed House and Apartment Character Districts

SPECIAL USE DISTRICTS

A Northern Waterfront Special Use District No. 1 Sec. 240.1

B Northern Waterfront Special Use District No. 2 Sec. 240.2

SOURCE: San Francisco Municipal Code, June 1990

Figure 9
Fisherman's Wharf Subarea:
Zoning and Special Use Districts

The subarea is also located within the Northern Waterfront Special Use District No. 1 (NWSUD#1), described in Section 240.1 of the City Planning Code. There are three Northern Waterfront Special Use Districts; their intention is expressed in Section 240: "In order to provide for certain areas with unique natural and man-made physical characteristics, distinct maritime character, special traffic, parking and use considerations, recognized development potential, and proximity to residential, public and commercial areas of regional, national and international significance which should be protected from adverse adjacent development, there shall be three Northern Waterfront Special Use Districts, Numbers 1, 2 and 3 . . ." Provisions of these Special Use Districts are applicable to all property, whether public or private, including property under the jurisdiction of the San Francisco Port Commission.

Land uses are subject to the provisions of NWSUD#1 which overlay and are in addition to the provisions of the C-2 zoning district. The applicable provisions state that conditional use authorization is required for all uses other than "waterborne commerce and navigation, and industrial, commercial and other operations directly related to the conduct of waterborne commerce or navigation." In addition to standard findings required for the granting of conditional uses pursuant to Section 303(c) of the City Planning Code,[1] the following criteria must be considered:

(1) Provision to the extent feasible, along the seawall and along the perimeters of piers or platforms, of public access and of open spaces available for public use and suitable for viewing purposes or water-oriented recreation;

(2) Limitation of water coverage in the Northern Waterfront area from the Hyde Street Pier to Pier 46 so as not to exceed the degree of coverage by piers as existing at the effective date of the NWSUD;

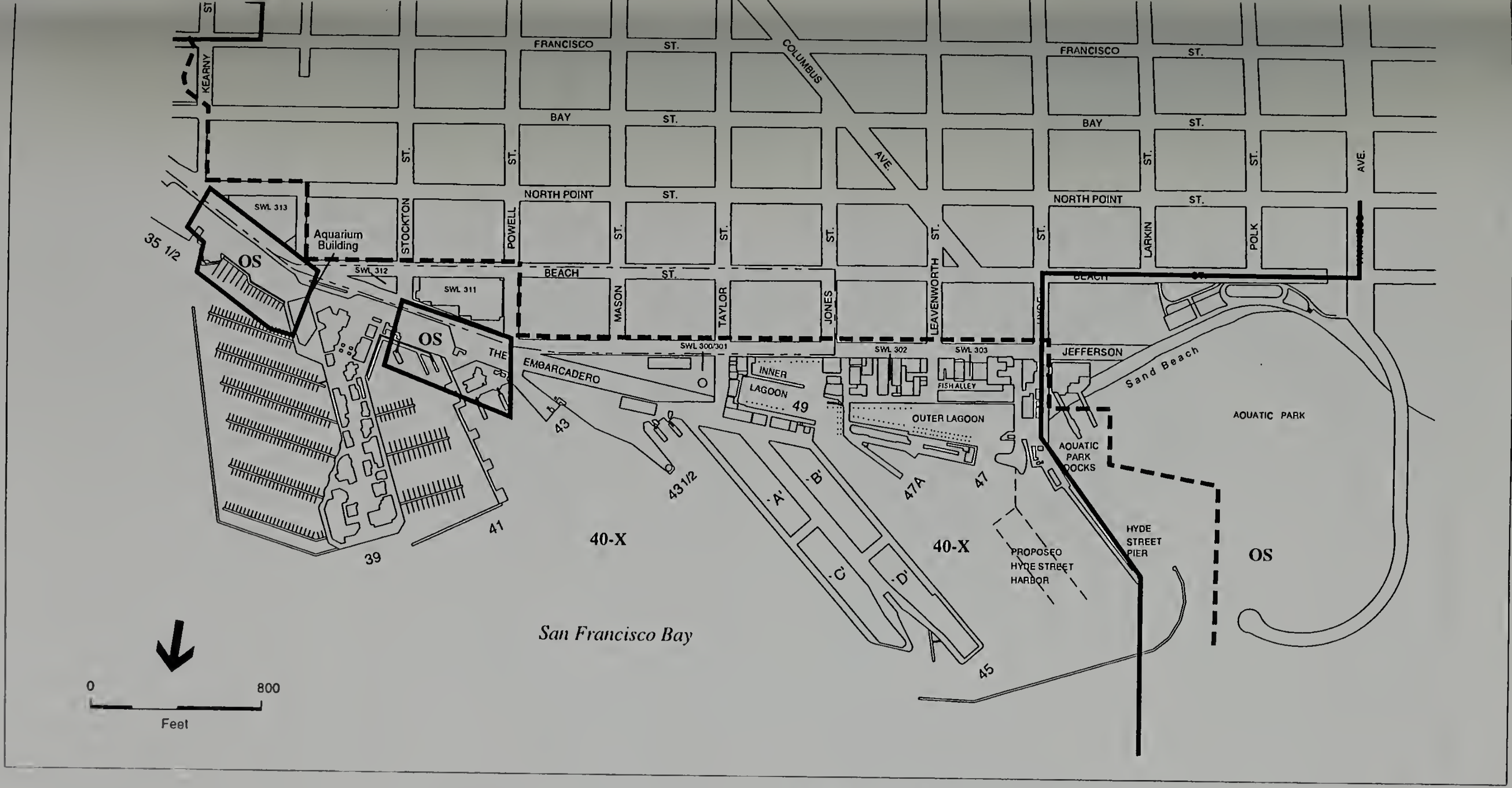
(3) Construction of new piers or platforms so that the water's edge shall be maintained at the seawall where feasible;

(4) Provision or maintenance of view corridors along streets into the Bay, and of panoramic views, in accordance with the Master Plan; and

(5) Development over the water on piers or platforms rather than on fill.

In the NWSUD#1, the basic floor area ratio limit is 5.0 to 1.

The subarea is within the 40-X Height and Bulk District which controls the entire Northern Waterfront area (see Figure 10). In this district the maximum allowable building height is 40 feet above the street. There is no requirement regarding maximum bulk.



— - - — - - San Francisco Municipal Railway (MUNI) F-Line: An extension of the F-Line from Market Street north to Fisherman's Wharf, featuring the City's historic streetcar collection.

▬ ▬ ▬ Waterfront Land Use Plan Area Boundary

SWL Seawall Lot

━━━ Height and Bulk District Boundary

HEIGHT AND BULK DISTRICTS

OS Open Space District

00-Z-1 First Numbers are Height Limits in Feet

Letter Symbols Refer to Bulk Limits in City Planning Code Sec. 270

Suffix Numbers Identify Districts in which Special Regulations Apply. (See City Planning Code Secs. 263 and Following)

SOURCE: San Francisco Municipal Code, June 1990.

San Francisco Waterfront Land Use Plan EIR ■

Figure 10

Fisherman's Wharf Subarea: Height and Bulk Districts

Off-street parking is required for commercial uses in the C-2 District by Section 151 of the City Planning Code. Section 152 of the City Planning Code includes requirements for off-street loading for projects in C-2 Districts. The Planning Commission may reduce parking requirements under provisions of NWSUD#1, in consideration of certain criteria set forth in Section 161(f).

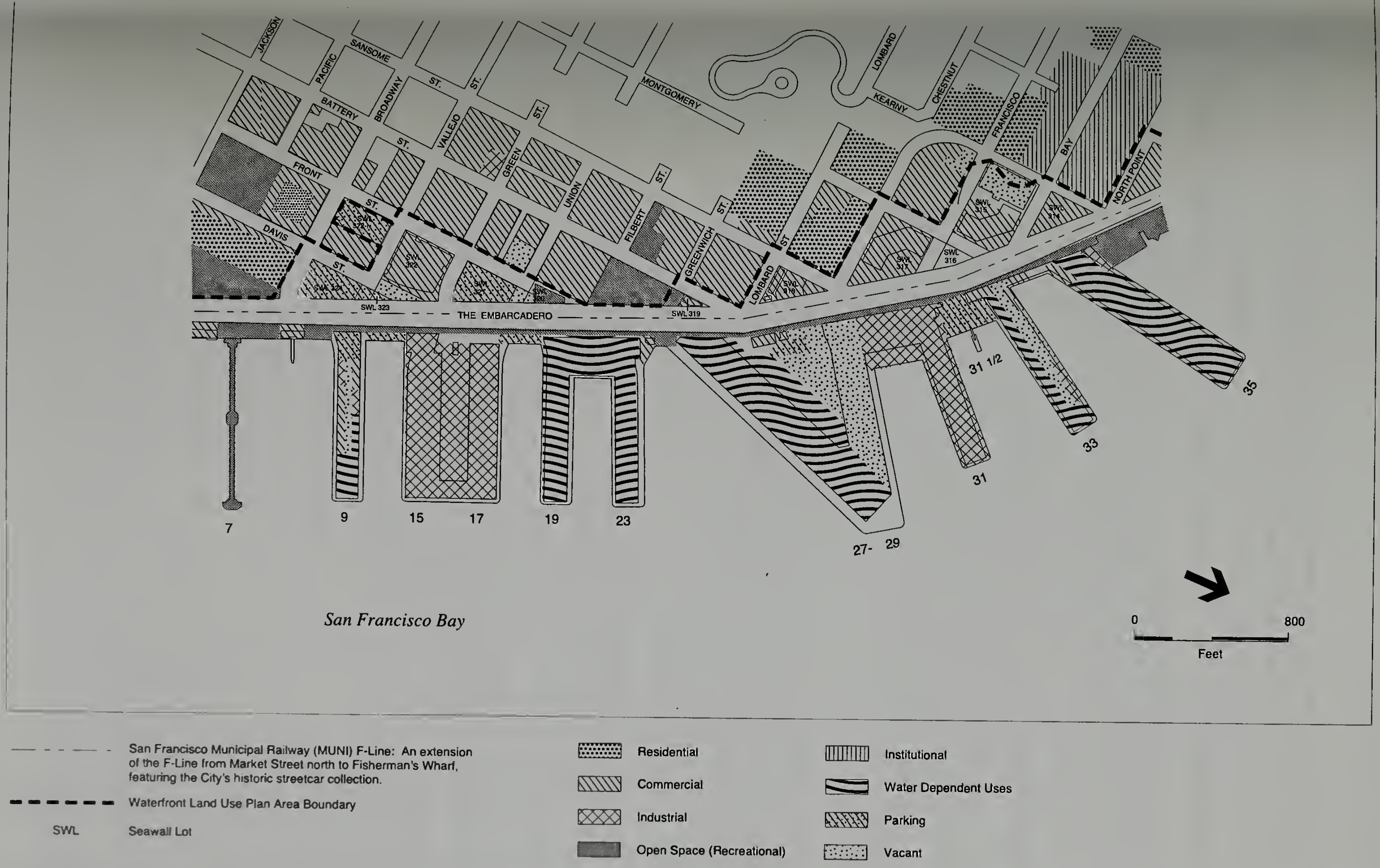
NORTHEAST WATERFRONT SUBAREA

The Northeast Waterfront subarea extends from Pier 35 and the corner of Kearny and North Point Streets south to Pier 7 near the foot of Broadway, inclusive. The subarea contains about 60 acres and includes nine finger piers and 12 seawall lots. Space in buildings in the subarea totals almost 2 million sq. ft.; another one million sq. ft. is in open land area. About 1.7 million square feet of the building space is occupied and in use; about 14 percent is vacant. About 740,000 sq. ft. of the open land area is occupied and in use; another 67,000 sq. ft. of open land contains public open space/public access areas. This area has evolved from a largely maritime and industrial district into a mixed-use area. See Figure 11 for a map of the subarea and its generalized land uses.

Land in use in the subarea totals about 2,400,000 sq. ft.; about 41 percent is water-dependent and about 59 percent is non-water-dependent. Dominant non-water-dependent uses are offices and warehousing. Offices are located primarily on the seawall lots, on Seawall Lot 315/316/317 (the two-story Francisco Bay Office Park, which also contains a restaurant), 322 (KGO) and 318 (the Roundhouse, a remnant of the Belt Railroad renovated and converted to office use). These offices were developed following Port Commission determinations that the properties were not required for the other purposes specifically identified in the Burton Act.

Four seawall lots in this subarea (321, 322-I, 323/324) are undeveloped and currently operate as public parking lots. Seawall Lot 314 is in use as a gas station and car wash.

The Port's piers in this subarea still support a variety of maritime and water-dependent uses, though in many cases at a much lower intensity than in previous times. The trend is toward relocation of maritime industrial uses to the Southern Waterfront subarea. Pier 27 (14 acres) is a newsprint shipping terminal (Pier 29 had also been a newsprint terminal but was vacated in 1994), while Piers 15-17 (9.5 acres) are used as a general warehouse. The Port's cruise ship terminal is located at Pier 35. Pier 31½ is the site of an excursion boat operation. In addition,



San Francisco Municipal Railway (MUNI) F-Line: An extension of the F-Line from Market Street north to Fisherman's Wharf, featuring the City's historic streetcar collection.

Waterfront Land Use Plan Area Boundary

SWL Seawall Lot

- Residential
- Commercial
- Industrial
- Open Space (Recreational)
- Institutional
- Water Dependent Uses
- Parking
- Vacant

SOURCE. SMWM, 1995

San Francisco Waterfront Land Use Plan EIR ■

Figure 11

Northeast Waterfront Subarea: Generalized Existing Land Use the Northeast Waterfront subarea includes sites for a number of maritime support activities, such as tug and tow boat operations and berthing, and the Port's Foreign Trade Zone, as well as maritime offices such as the headquarters of the San Francisco Bar Pilots at Pier 9. Some pier and bulkhead building space is also leased for limited terms (ranging from month-to-month to five years) for non-water-dependent uses, primarily general warehousing and office activities. A number of restaurants are also located in bulkhead buildings. This subarea includes the Pier 7 public access and fishing pier, a major recreational and open space amenity.

The subarea contains about 237,000 sq. ft. of public access areas, mostly consisting of the recently constructed Embarcadero Promenade (not included in open land area totals because it lies within street rights-of-way that are excluded from the inventory), adjoining spaces on wharves, and the Pier 7 public access. See Figure 23a, p. 159, for a map of public access/open space areas.

From the mid-1950's until demolition of the Embarcadero Freeway in 1991, the southern portion of this subarea was dominated by the elevated Broadway on/off ramp and the Freeway's stub end at the foot of Broadway. The former right-of-way is vacant, including Seawall Lot 323, and is being used for parking and storage.

Changes in land uses over time in the surrounding area have occurred with a reduction in the viability of the remaining piers for cargo shipping and related maritime support operations. Finger piers are outmoded for modern shipping, reducing the ability of this subarea's facilities to compete. One of the primary reasons for elevating the Embarcadero Freeway was to prevent through traffic from interfering with the beltline railway and truck access and maneuverability to the finger piers. With the general increase in local traffic over the years, and with the demolition of the Embarcadero Freeway, large truck access through local streets to service the maritime-industrial working piers has been compromised. This end of The Embarcadero roadway has changed in function from an industrial road that accessed the piers, with the former beltline railroad servicing many of them, to a major arterial that will be expected to carry heavy commuter and visitor traffic and transit in addition to local traffic. With completion of the Waterfront Transportation Projects, The Embarcadero will be recast as a major, landscaped urban boulevard with enhanced public transit, bikeways, and pedestrian promenade. Most cargo-related industries that formerly operated in this subarea have already either left the City or shifted location to the Southern Waterfront, based on numerous economic and other factors. Maritime activities that do not require quick access to freeways and other transportation distribution points (e.g., cruise and excursion boats, ferries, maritime support) remain suited to the area.

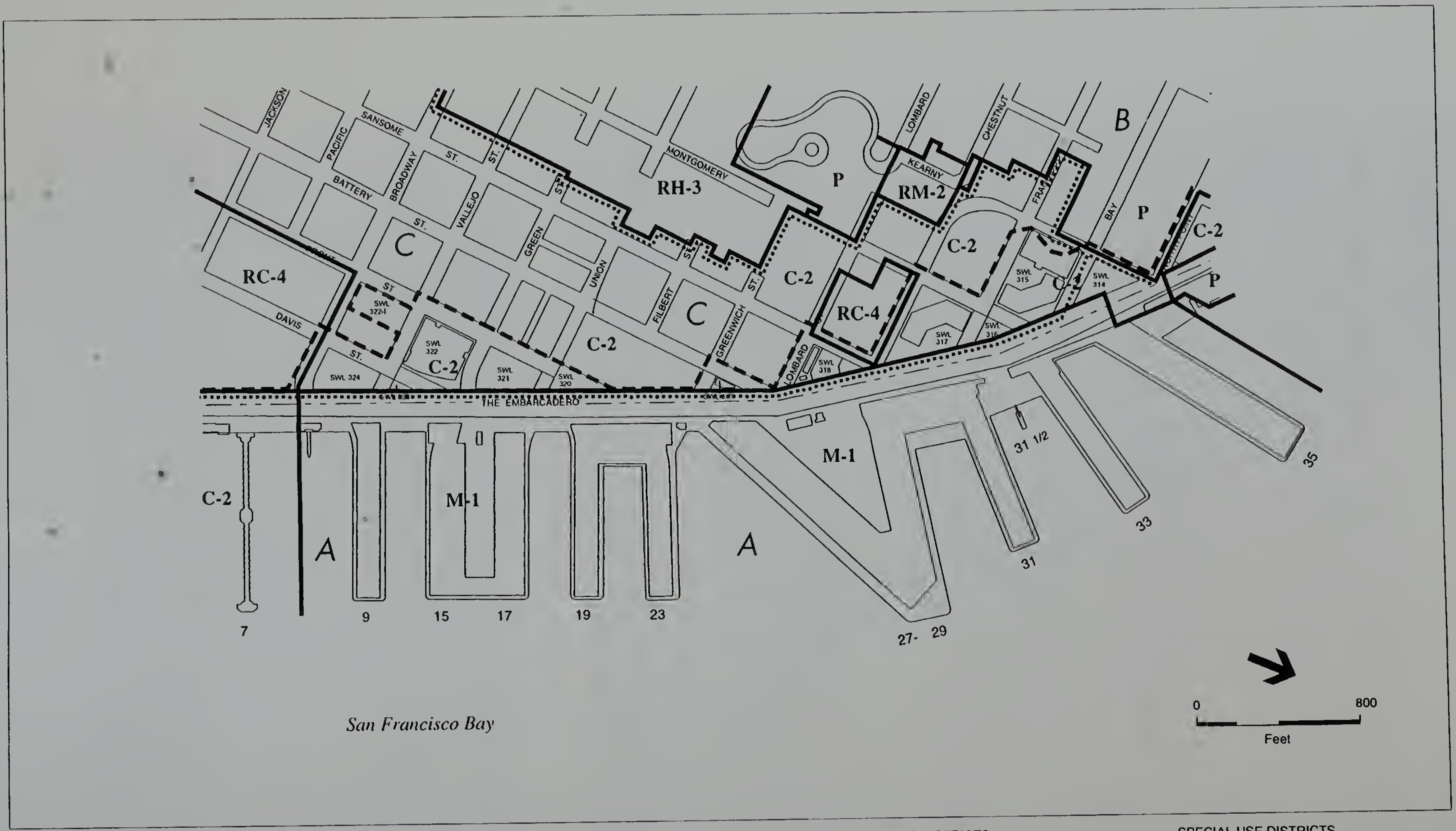
Land Uses in the Vicinity

Adjacent to the subarea, the land use trend has been conversion of former industrial/warehouse buildings to small- and medium-scale offices or limited retail uses, construction of new offices or mixed office/retail complexes, and high-density residential complexes. Property adjacent to this subarea generally divides into three distinct areas: the Golden Gateway center, the Battery-Sansome Corridor, and the foot of Telegraph Hill. The Golden Gateway center is a Redevelopment Area. It is an urban mixed use residential neighborhood adjacent to the subarea, located along the south side of Broadway and westward to Front and Battery Streets and extending south to Embarcadero Center. The Battery-Sansome Corridor extends from Market Street north to The Embarcadero, and operates as the key north-south arterial connecting the downtown with the northern waterfront. The buildings between Broadway and The Embarcadero (between the east slope of Telegraph Hill and Port property) are included in the Northeast Waterfront Historic District, the boundaries of which also include five Port seawall lots in this subarea. Many of the historic brick and concrete industrial structures (not located on Port property) have been converted to office uses, public relations/advertising and design-related services. Included in this sector is the newer Levi Strauss office campus and publicly accessible open space, partly located on Port property. The building scale in this area ranges from two to six stories.

At the foot of Telegraph Hill, a cluster of multi-unit residential developments has emerged adjacent to the north end of the Battery-Sansome Corridor. These privately developed condominium complexes, ranging from four to ten stories in height, clearly define a residential neighborhood, surrounded by office and commercial businesses, all of which are within one or two blocks from the waterfront.

Zoning

Zoning of this subarea is split by The Embarcadero. The landside of The Embarcadero is in a C-2 (Community Business) zoning district (see Figure 12). Refer to the Zoning discussion in the Fisherman's Wharf subarea section for a description of the C-2 district and its provisions (pp. 122-126).



— - — -	San Francisco Municipal Railway (MUNI) F-Line: An extension of the F-Line from Market Street north to Fisherman's Wharf, featuring the City's historic streetcar collection.
▬ ▬ ▬	Waterfront Land Use Plan Area Boundary
SWL	Seawall Lot
———	Zoning Boundary
········	Special Use Districts Boundary

ZONING DISTRICTS

C-2	Commercial Districts
NC-1	Neighborhood Commercial Districts
P	Public District
RC-4	Residential-Commercial Combine Districts
RH-3	House Character Districts
RM-4	Mixed House and Apartment Character Districts

SPECIAL USE DISTRICTS

A	Northern Waterfront S.U.D. No. 1, Sec. 240.1
B	Northern Waterfront S.U.D. No. 2, Sec. 240.2
C	Northern Waterfront S.U.D. No. 3, Sec. 240.3

SOURCE: San Francisco Municipal Code, June 1990.

San Francisco Waterfront Land Use Plan EIR ■

Figure 12

This same area landside of The Embarcadero, with the sole exception of Seawall Lot 314, is also within the NWSUD#3, which also encompasses a considerable area adjacent to the subarea. Development of sites is subject to the provisions of this Special Use District (SUD) which overlay and are in addition to the provisions of the underlying zoning district. This SUD specifies as principal permitted uses industrial, commercial and other operations directly related to the conduct of waterborne commerce or navigation, and wholesale establishments conducted entirely within an enclosed building. Any development which includes an area (excluding the area of public streets and alleys) of at least three acres may be permitted only upon conditional use approval by the City Planning Commission. In addition to standard findings required for the granting of conditional uses pursuant to Section 303(c) of the City Planning Code[2], the following criteria must be considered:

(1) Conformance to the Plan for the Northeastern Waterfront, a part of the Master Plan, including streets and roadways as indicated therein;

(2) Assurance of a general profile for development having higher portions near Telegraph Hill and lower portions near The Embarcadero;

(3) Assurance of view corridors between Telegraph Hill and the waterfront and Bay;

(4) Provision of open spaces available to the public; and

(5) Adherence to a character of small-scale development, in keeping with the character of nearby areas of the City.

Under the SUD, a hotel or motel, automobile service station, any building or use which provides a greater number of off-street parking spaces than required by the Code (except in cases of fewer than 10 spaces), and any use not screened from view from adjacent streets and other public areas (except off-street accessory parking for nine or fewer automobiles) is permitted only upon approval by the City Planning Commission as a conditional use. The basic floor area ratio limit is 5.0 to 1.

The Embarcadero roadway bayward, including all of the piers, is in an M-1 zoning district, a Light Industrial zone that provides land for industrial development. In general, M-1 Districts are considered suitable for smaller industries dependent upon truck transportation. Most industries are permitted in M-1 districts but some with particularly noxious characteristics are excluded. The permitted industries have certain requirements as to enclosure, screening, and minimum distance from residential districts.

The Embarcadero and bayward is also located within NWSUD#1, described in Section 240.1 of the City Planning Code. Development of sites is subject to the provisions of this SUD which overlay or are in addition to the provisions of the underlying zoning district. The applicable provisions state that a Conditional Use authorization is required for all uses other than "waterborne commerce and navigation, and industrial, commercial and other operations directly related to the conduct of waterborne commerce or navigation." Refer to the Zoning discussion in the Fisherman's Wharf subarea section (pp. 122-126) for more information about this SUD and its provisions.

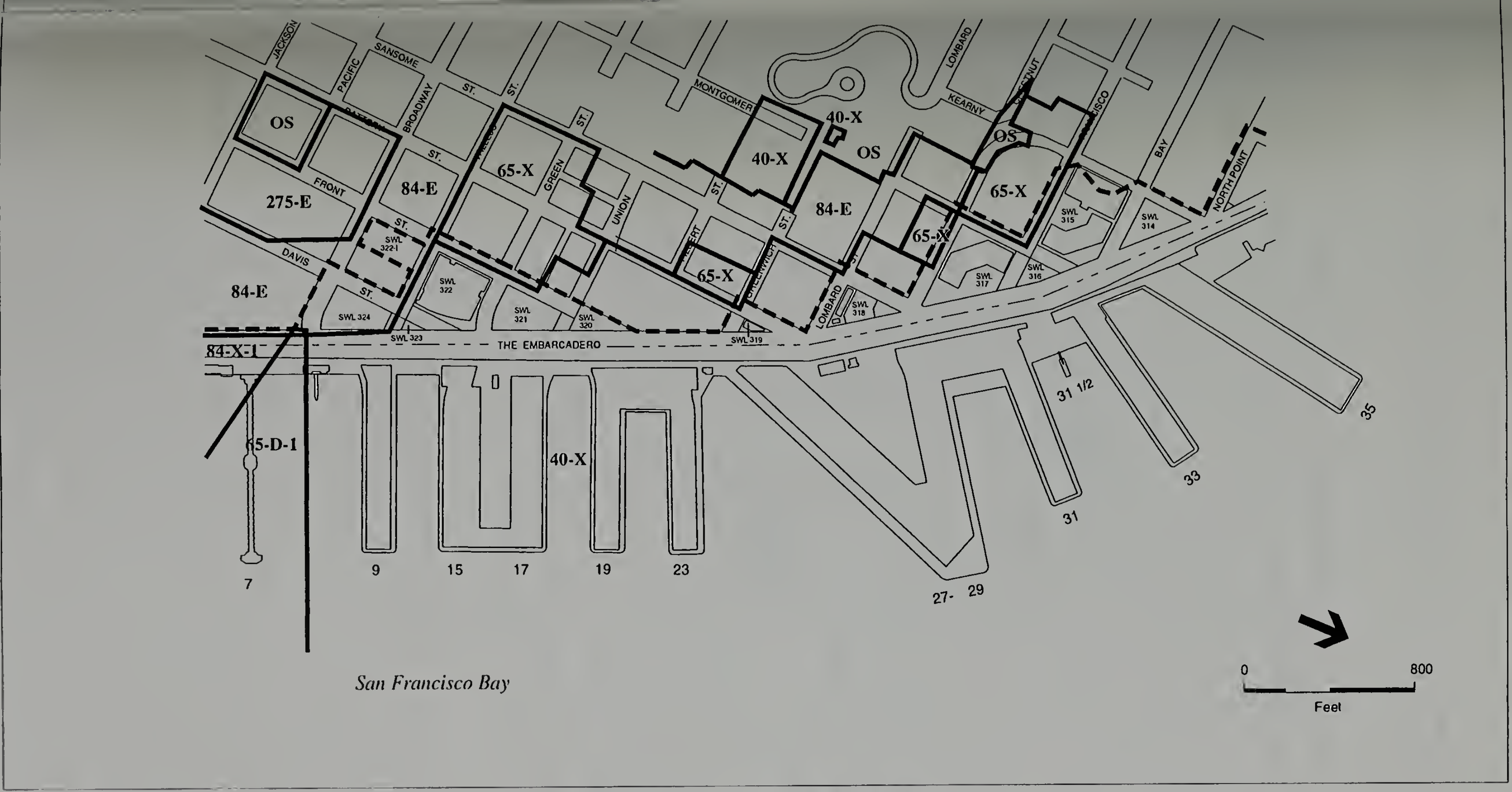
Five seawall lots (321, 322, 322-I, 323, 324) between Union Street and Broadway are included in the Northeast Waterfront Historic District. The purposes and description of this District are found in Article 10, Appendix D of the City Planning Code. Any major exterior alteration or new construction on these lots would require a Certificate of Appropriateness from the Planning Commission or the Planning Department to insure compatibility with the existing historic buildings.

The planning area is within the 40-X Height and Bulk District which controls the entire Northern Waterfront area (see Figure 13). In this district the maximum allowable building height is 40 feet above the street. There is no requirement regarding maximum bulk.

Off-street parking is required for commercial uses in the C-2 and M-1 Districts by Section 151 of the City Planning Code. Section 152 of the City Planning Code includes requirements for off-street loading for projects in C-2 Districts. Certain parking requirements are superseded by provisions of the applicable NWSUD.

FERRY BUILDING SUBAREA

The Ferry Building subarea, comprising about 17 acres, extends from the Pier 5 Pierhead Building on the north, to the south end of the Embarcadero Promenade near the foot of Folsom Street. Space in buildings in the subarea totals about 550,000 sq. ft.; another 460,000 sq. ft. is in open land area. About 340,000 square feet of the building space is occupied and in use; about 37 percent is vacant. About 154,000 sq. ft. of the open land area is occupied and in use; another 178,000 sq. ft. of open land contains public open space/public access areas. Offices, visitor specialty retail, restaurants, ferry operations, open space, a gas station, and parking represent most of the land uses in this subarea. Except for the ferry operations in and adjacent to the Ferry



— – – — –	San Francisco Municipal Railway (MUNI) F-Line: An extension of the F-Line from Market Street north to Fisherman's Wharf, featuring the City's historic streetcar collection.
▬ ▬ ▬ ▬	Waterfront Land Use Plan Area Boundary
SWL	Seawall Lot
▬▬▬	Height and Bulk District Boundary

HEIGHT AND BULK DISTRICTS

OS	Open Space District
00-Z-1	First Numbers are Height Limits in Feet
	Letter Symbols Refer to Bulk Limits in City Planning Code Sec. 270
	Suffix Numbers Identify Districts in which Special Regulations Apply. (See City Planning Code Secs. 263 and Following)

SOURCE: San Francisco Municipal Code, June 1990.

Figure 13

Northeast Waterfront Subarea: Height and Bulk Districts

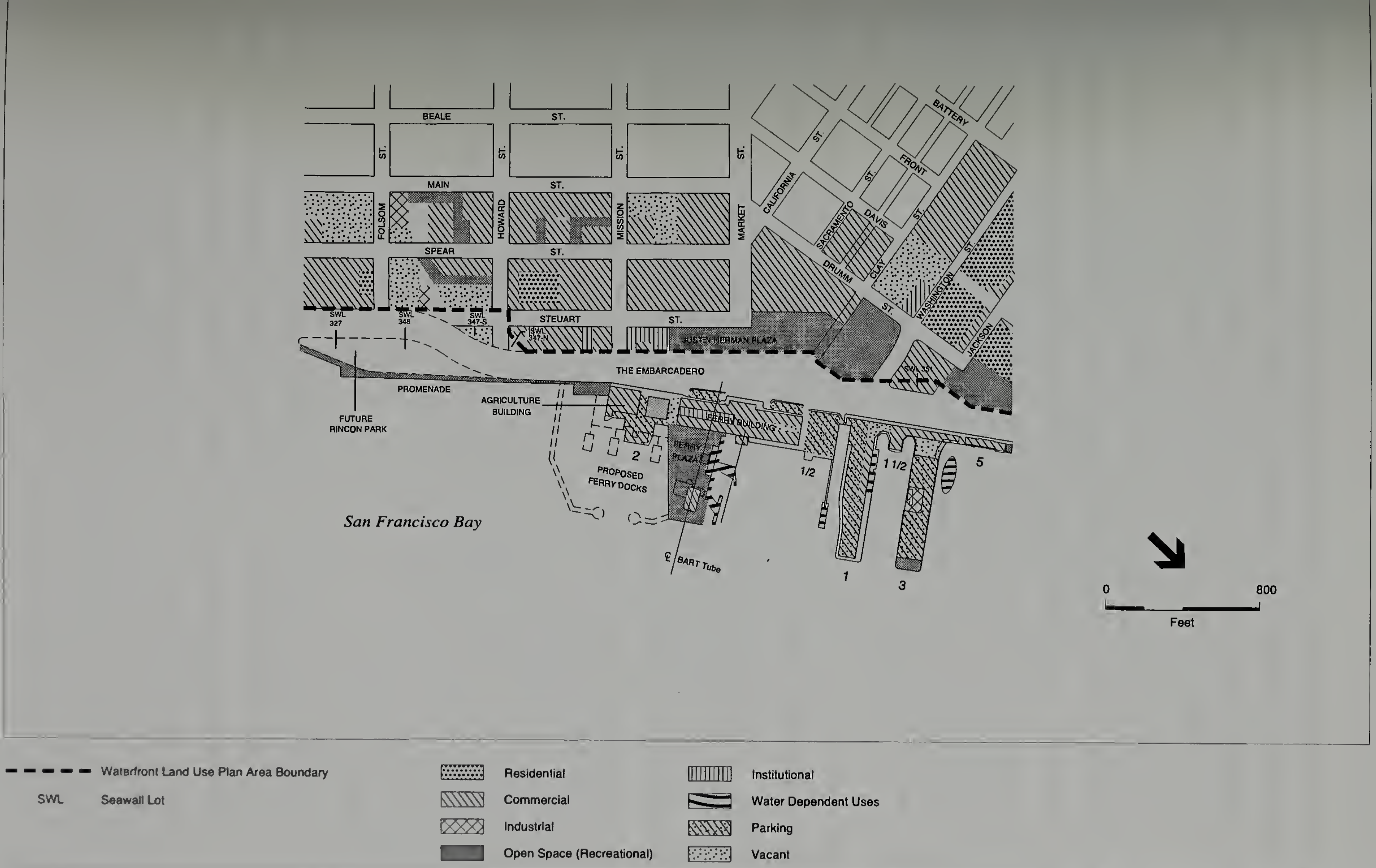
Building, little water-dependent activity remains in this subarea. See Figure 14 for a general land use map of the subarea.

The Ferry Building is the focal point of this subarea. Restoring this building to its former stature as a public transportation hub and centerpiece of the waterfront is of high priority to the City, as expressed through voter approval of an exemption from Prop H in 1992. Environmental review of rehabilitation proposals is underway. The Ferry Building is a City Landmark that is also listed on the National Register of Historic Places. Originally named the Union Depot and Ferry House, this 660-foot-long by 160-foot-wide structure, with its 240-foot-high clock tower, is situated at the terminus of the Market Street corridor. Since the removal of the Embarcadero Freeway in 1991 the Ferry Building has regained its significant visual presence from the City side of The Embarcadero roadway. Completed in 1898, the Ferry Building has marked an historic entry and departure point for the City. It was once a bustling ferry terminal, with more than 170 ferries arriving and departing each day from eight berths, and these vessels carried approximately 50 million riders per year. Currently fewer than 3 million riders per year utilize the two existing berths. The building currently is used mostly for offices, including the Port's administrative headquarters.

The other significant architectural structure is the former U.S. Agriculture Building south of the Ferry Building, which is a modified palazzo building with Renaissance ornamentation that is also listed on the National Register of Historic Places. Originally the building contained a public lobby with offices above. The interior of the building has been modified by numerous tenants and little remains today of the original elements or materials, except for the staircase at The Embarcadero entrance. Today it is used for offices.

Piers 1 and 3 are, according to the BCDC permit, interim parking facilities which the Port leases on a month-to-month basis. The historic ferry boat Santa Rosa, converted to offices and assembly space, is berthed at Pier 3. Pier ½ is a ferry terminal located just north of Ferry Plaza.

Public access opportunities in this area include the Embarcadero Promenade, public access at Pier 3, and Ferry Plaza. The subarea contains a total of about 178,000 sq. ft. of existing public open space, and another approximately 237,000 sq. ft. is planned, most notably the future 4.5-acre Rincon Park, on Seawall Lots 327, 348 and 347-S. The Embarcadero Promenade, with tidal steps, extends from the intersection of Mission Street to Harrison Street, and is a major public access improvement created in the early 1980s when six finger piers between the Ferry Building and Pier 22½ were removed. Pier 5, north of the Ferry Building, was also removed at



SOURCE: SMWM, 1995

San Francisco Waterfront Land Use Plan EIR ■

Figure 14

Ferry Building Subarea: Generalized Existing Land Use that time. Ferry Plaza, located on the east side of the Ferry Building, provides a mix of activities to serve the public, including the Golden Gate Ferry Terminal, a restaurant, and some parking. Within The Embarcadero right-of-way, in front of the Ferry Building, a farmer's market operates on Saturday mornings. See Figure 23a, p. 159, for a map of public access/open space areas.

The Ferry Building subarea has been the subject of considerable attention in the aftermath of the 1989 Loma Prieta earthquake, which caused damage to the Ferry Building and the elevated Embarcadero Freeway that had obscured the view of the building for decades. The subsequent demolition of the freeway and connecting ramps to the Bay Bridge reconnected the Ferry Building with the downtown area, opened the waterfront visually as well as physically to the public, reduced traffic noise, eliminated the freeway's shadows and dominating bulk, and heightened concern and interest in how Port property in the area is used.

The Embarcadero surface roadway has been reconstructed north and south of the subarea. Planning is ongoing for options for configuring the Mid-Embarcadero roadway, which runs through this subarea, and Terminal Separator Structure (ramp connections to Interstate 80/Bay Bridge), Mid-Embarcadero open space (at the foot of Market Street), the Downtown Ferry Terminal and the Ferry Building rehabilitation. Decisions on these projects will shape future appearance and land use options for this subarea. These projects are discussed in Chapter III, Project Description, pp. 53-58. Streetcar trackage has been provided along The Embarcadero north and south of the subarea and will be installed as part of the Mid-Embarcadero roadway project to accommodate the F-Line historic streetcars, which will eventually run between Castro Street and Fisherman's Wharf via Market Street and The Embarcadero, and MUNI Metro streetcars, which will surface to serve The Embarcadero from Mission Street south to King Street before traveling King to about Seventh Street.

Land Uses in the Vicinity

The Ferry Building subarea is adjacent to downtown San Francisco, the City's primary high-rise district, comprised of office uses, hotels, and restaurants as well as other retail and commercial services. Immediately adjacent to the Project Area is considerable open space, including Justin Herman Plaza, former Embarcadero Freeway Clay/Washington access ramp right-of-way, and the MUNI layover area at Mission Street. Options for reconfiguring open space at the foot of Market Street in coordination with Embarcadero roadway planning and Ferry Building rehabilitation are being studied by the Waterfront Transportation Project office, part of the San Francisco Chief Administrator's Office.

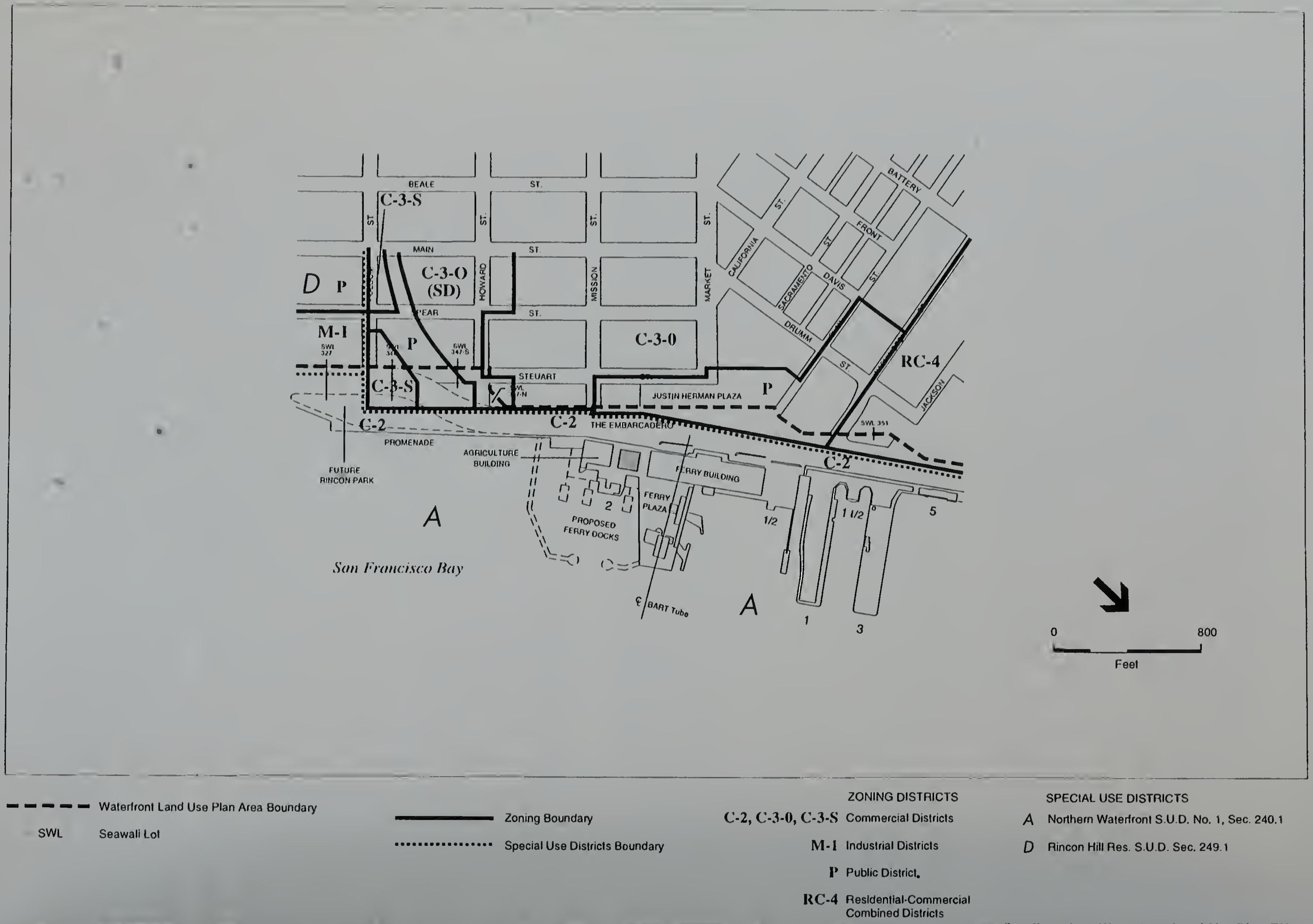
The northern part of the subarea is adjacent to the Golden Gateway neighborhood, containing low to high-rise mixed residential and commercial development. Just north of Market Street Embarcadero Center is prominent, consisting of high-rise offices over multi-level retail uses. Just south of Market Street are restaurant, office and hotel uses, recently revitalized due to the Embarcadero Freeway demolition. The southern part of the subarea is adjacent to the Rincon Hill district and the Rincon Point/South Beach redevelopment area, both of which are former industrial areas. Rincon Hill has been zoned for high-density mixed commercial and residential development, exemplified by the recent Hills Plaza restoration project.

The Rincon Point/South Beach redevelopment area has been approved for office and commercial uses and includes Port property between Howard and Harrison Streets that will become the Rincon Point Park, a new 4.5-acre public open space adjacent to an approved but not yet built 14-story headquarters building for the Gap (not located on Port property).

Zoning

The waterside of The Embarcadero is in a C-2 (Community Business) zoning district and in NWSUD#1. Please refer to the Zoning discussion under the Fisherman's Wharf subarea (pp. 122-126) for information about these zoning controls. (See Figure 15 for a map of zoning.)

Landside of The Embarcadero the subarea lies within a number of different zoning districts. Seawall Lot 351 at the foot of Washington Street is within an RC-4 district. An RC-4 District provides for a mixture of high-density dwellings with supporting commercial uses as permitted in a C-2 District located in or below the ground story and excluding automobile-oriented establishments. South of Mission Street, Seawall Lot 347-N is within the C-3-O (SD) (Downtown Office) District. Seawall Lot 347-S is in a P (Public Use) District. Seawall Lot 348 is in a C-3-S (Downtown Support) District. The high-density mixed-use nature of RC-4 and C-3 districts is recognized by certain reductions in off-street parking requirements. Seawall Lot 327 is in an M-1 (Light Industrial) District. The four seawall lots south of Mission Street are located in the Rincon Point-South Beach Redevelopment Area. The Rincon Point-South Beach Redevelopment Plan, rather than the City Planning Code, controls permitted land uses and development on these parcels. Seawall Lots 347-S, 348 and 327 are designated for Park use under the Redevelopment Plan, and will be the site of the future Rincon Park and a restaurant. Seawall Lot 347-N is designated for commercial use, with an alternate of housing. However, it is currently a public plaza and is not expected to undergo a change of use.



SOURCE: San Francisco Municipal Code, June 1990.

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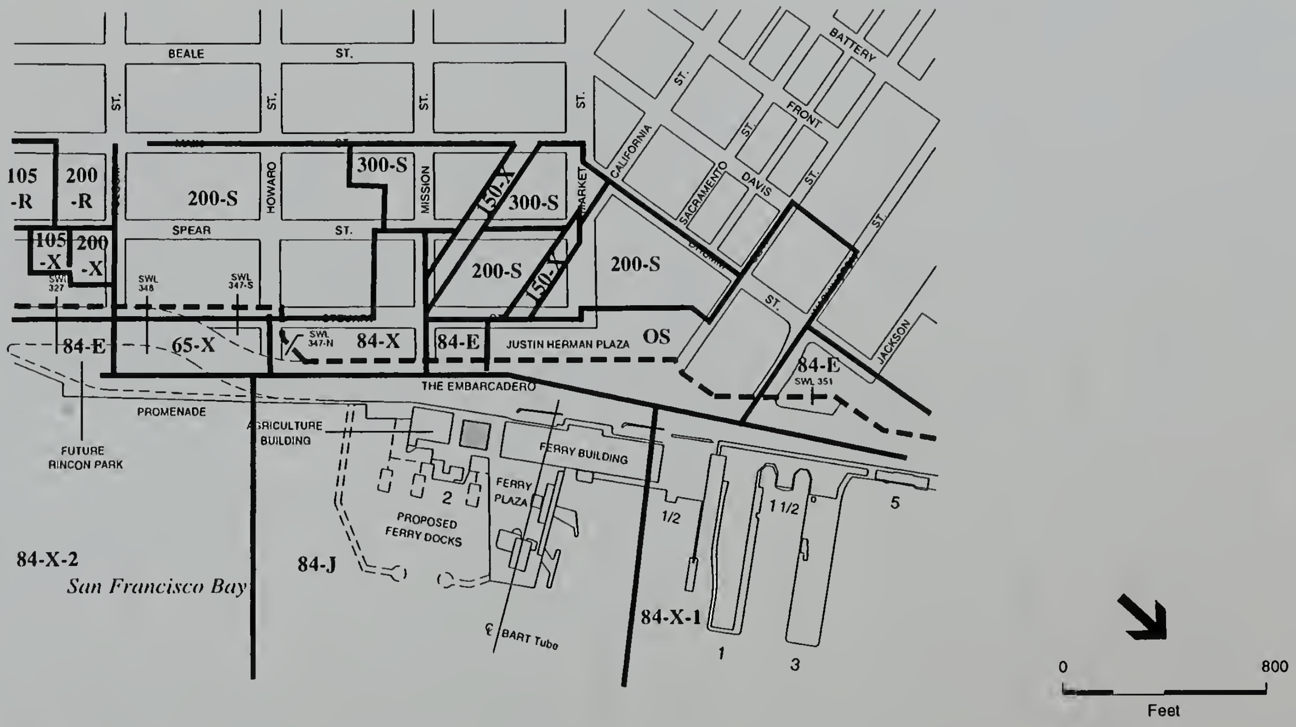
Figure 15

Most of the subarea is subject to an 84-foot height limit, except Pier 7, which has a 65-foot height limit, and Seawall Lots 347-S and 348, which have a 65-foot height limit (see Figure 16). The 84-X-1 Height District permits height exceptions up to 125 feet; the 84-X-2 District permits height exceptions up to 175 feet to be approved by the City Planning Commission (Sections 263, 263.2, 263.3). Permitted Floor Area Ratios range from 4.8:1 for C-2 areas north of the Ferry Building and near the Bay Bridge, to 10:1 in the Ferry Building area (see Section 124(c)). Off-street parking and off-street freight loading spaces are required for any new uses according to the amounts shown, by use, in Sections 151 and 152 of the City Planning Code. Special parking standards may be applicable in the Rincon Point/South Beach Redevelopment Area based on the San Francisco Redevelopment Agency's "The Design for Development" for the area.

SOUTH BEACH/CHINA BASIN SUBAREA

The South Beach/China Basin subarea includes about 135 acres and extends from Pier 22½, just north of the Bay Bridge at Harrison and Steuart Streets, to the shoreline south of Mariposa Street and Seawall Lot 345, near Eighteenth and Illinois Streets. See Figures 17a and b, pp. 141-142, for a delineation of this large subarea and its generalized land uses. The subarea includes about a dozen major piers and 14 seawall lots. In this subarea the land use pattern shifts from that found in the more northerly subareas, in which uses occur primarily within buildings or structures, to uses that take place on open land. There is about 1,968,000 sq. ft. of building space that is 36 percent vacant, and 4,325,000 sq. ft. of open land that is about two-thirds vacant/unleased. China Basin Channel bisects this subarea into the South Beach district to the north and the Mission Bay district to the south. A transformation from maritime-industrial uses is continuing in the northern portion of the subarea, on the landside area west of the completed Southern Embarcadero roadway improvements, from the Bay Bridge to China Basin Channel. New mixed residential and commercial neighborhoods are developing on, adjacent to, and across from Port property, spurred in part by buildout of the South Beach neighborhood according to the Rincon Point/South Beach Redevelopment Plan adopted in 1980. Extending inland from the Bay at China Basin to Seventh Street, there is an active houseboat colony, marina, and public access path along the banks of Mission Creek. Some water-dependent uses (maritime support) remain north of China Basin and are more prevalent south of the Basin (ship repair, maritime support, water recreation).

Total building space and open land area in use in the South Beach/China Basin subarea is about 2,000,000 sq. ft., excluding housing. Notwithstanding the visible land use changes in the South



- - - - - Waterfront Land Use Plan Area Boundary

SWL Seawall Lot

—— Height and Bulk District Boundary

HEIGHT AND BULK DISTRICTS

OS Open Space District

00-Z-1 First Numbers are Height Limits in Feet

Letter Symbols Refer to Bulk Limits in City Planning Code Sec. 270

Suffix Numbers Identify Districts in which Special Regulations Apply. (See City Planning Code Secs. 263 and Following)

SOURCE: San Francisco Municipal Code, June 1990.

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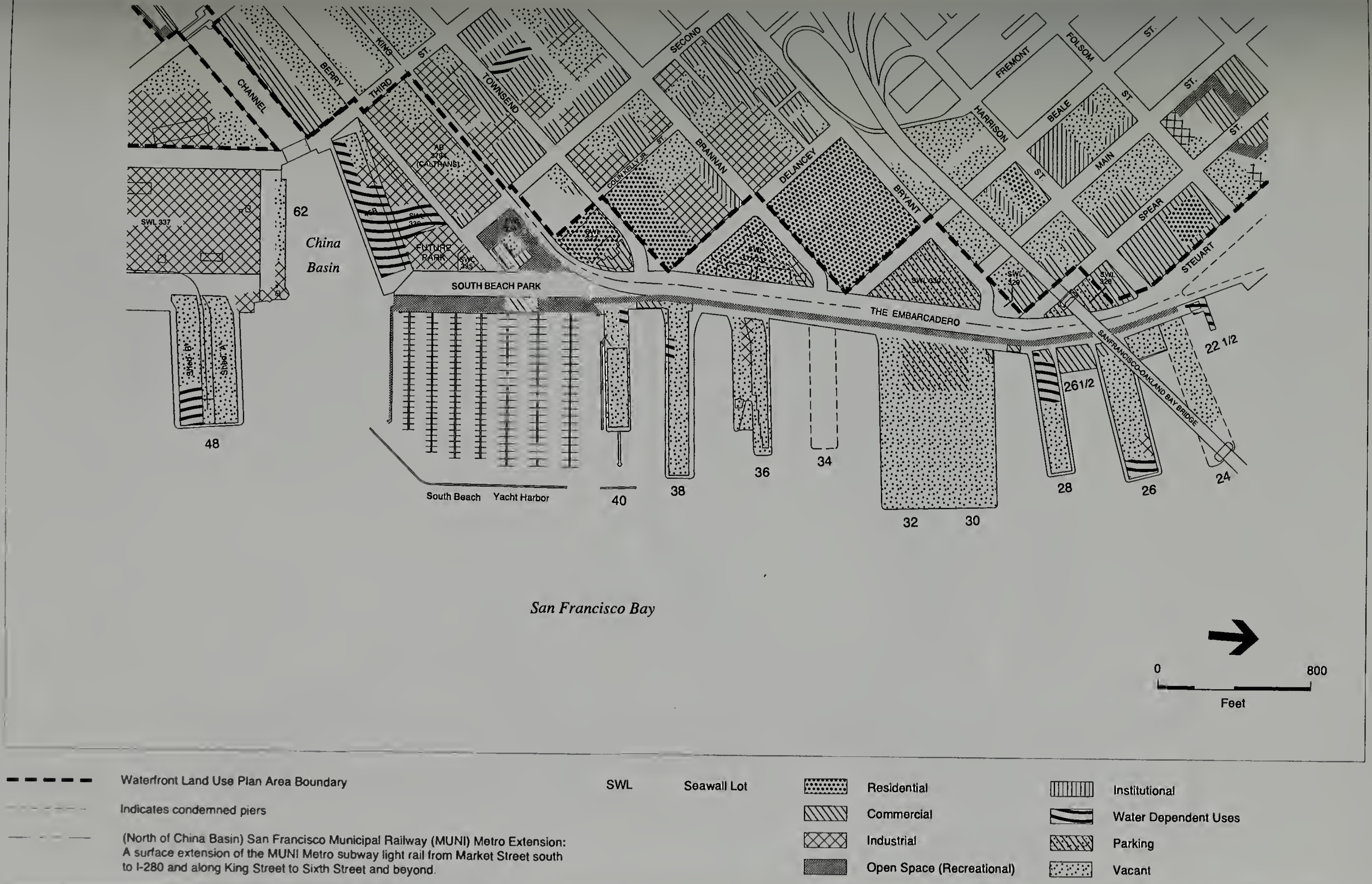
Figure 16

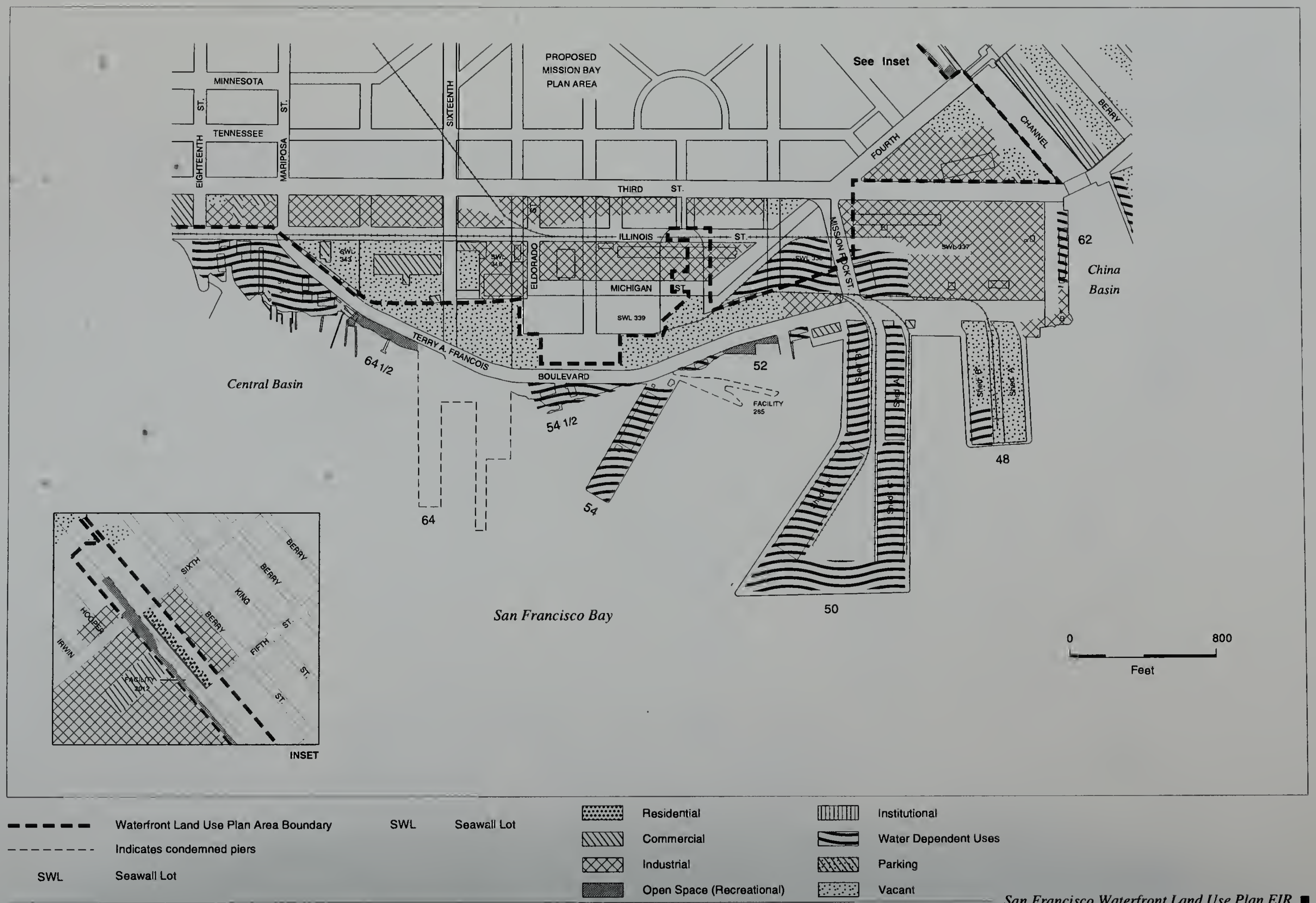


SOURCE: SMWM, 1995

San Francisco Waterfront Land Use Plan EIR ■

Figure 17a

South Beach/China Basin Subarea:
(Northern Portion)
Generalized Existing Land Use



SOURCE: SMWM, 1995

San Francisco Waterfront Land Use Plan EIR ■

Figure 17b

South Beach/China Basin Subarea: (Southern Portion)

Beach area, in the subarea as a whole about 48 percent of space in use is devoted to water-dependent uses, 18 percent to warehouse and industrial uses, and 13 percent to parking. The remaining 21 percent of uses include housing, retail and office. This is the only subarea that contains housing, 310 units, most in the Delancey Street and Steamboat Point developments on Seawall Lots 331/332 and 333-S respectively, and about 20 houseboats berthed in upper China Basin Channel (Mission Creek).

Historically, this area was dominated by industry, maritime uses and railroad terminals. Most of the piers were constructed between 1912 and 1930 to serve the commercial breakbulk shipping industry. Activity in the area was at its peak during World War II when breakbulk shipping was still flourishing and numerous Navy vessels were serviced at area facilities. The development of the interstate highway system and growth of the trucking industry made the large rail freight yards obsolete, and the development of container cargo shipping rendered the breakbulk finger piers unsuitable for most maritime commerce.

At one time there were 16 large finger piers in active use along this stretch of the waterfront. Today, three of those have been demolished (Piers 42, 44, 46A) and replaced by South Beach Harbor (690 berths for pleasure craft); three are condemned (Piers 24, 34, 64); and four are mostly vacant (Piers 30-32, 36, and 38). Several of the piers currently accommodate active, water-dependent uses on a regular basis: Pier 22½ is occupied by Fire Station #35, where the City's fireboats are docked; portions of Piers 26 and 38 are used by maritime support services that include divers, underwater construction and emergency spill cleaning services, and ferry boat support; Pier 28 has been temporarily used for fishing-related activities, pending completion of the Pier 45 earthquake repair project (now complete). Piers 30-32, 12 acres in size, is a double pier with a truck ramp down the center between the two, and is a key temporary and layover berth facility and is also used for temporary purposes such as top-side ship repair, construction lay-down yards, parking, and short-term community and other entertainment events. Pier 46B is the location of the Port maintenance operations, and is also a berthing and service area for tug and tow vessels; Pier 48 is a cargo warehouse and maintenance facility for ferry boats; Pier 50, 20.5 acres in size, is a ship repair facility and cargo warehouse for coffee; between Piers 50 and 52, at 50½, are the Mariposa Hunter's Point Yacht Club and miscellaneous offices; between Piers 52 and 54 is the Bay View Boat Club and a public boat launch. Pier 54 is a maritime support facility providing tug and tow services as well as seasonal fishing operations. Pier 54½ has tug boat service and boat storage. Just below the condemned Pier 64, there is Agua Vista Park, Mission Rock Resort restaurant, and a small boat yard. On the landside, seawall lots include the International Longshoreman Workers Union office on Lot 334, and Port maintenance support facilities such as storage on Seawall Lots 335 and 336, as well as parking.

Though the general decline of the industrial maritime industry in the area has been evident and substantial, the operations that remain continue to provide important services to maritime activities in San Francisco and the region. Most of the remaining, low intensity maritime operations north of China Basin have been able to coexist with the emerging residential and commercial uses in the South Beach and Rincon Hill neighborhoods. Twenty years ago, in the BCDC Special Area Plan, the decline in demand for these facilities for water-dependent uses was noted. In the intervening years there has been no regeneration of economic activity on these piers.

By comparison to the lack of activity or change on the waterside, there has been a dramatic transformation on some of the adjacent upland areas north of China Basin. There is a new residential community along The Embarcadero in the South Beach Redevelopment Area as well as in the Rincon Hill Special Use District. To implement the Redevelopment Plan, the State legislature adopted legislation freeing Port Seawall Lots 331, 332, and 333 from public trust use restrictions for 66 years.[2] This has permitted the construction of nearly 300 housing units on Port property. Seawall Lots 328 and 330 are used for parking. Seawall Lot 329 is open space adjacent to the "Portside" housing development.

At the southern end of this subarea, the seawall lots hold such uses as H & H Ship Service, which is the only hazardous waste facility in the region providing tank cleaning service; a paper recycling facility; small offices; warehouses; tour bus parking; and a number of smaller industrial uses.

Public open space in the subarea totals about 288,000 sq. ft., with another 558,000 sq. ft. planned or under construction. Major existing public open space includes the South Beach Harbor Promenade, South Beach Park on Seawall Lot 334, Mission Creek Harbor, and Agua Vista Park. The Embarcadero Promenade between Townsend and Harrison Streets provides another 147,000 sq. ft. of public open space within the road right-of-way. Planned open space includes expansion of South Beach Park from three to five acres, and a 10.8-acre Mission Bay Wetlands Park on part of Seawall Lot 337. See Figures 23a and 23b, pp. 159-160, for a map of public access/open space areas.

In the Mission Bay District, a development agreement between Catellus Development Corporation and the City and Port was adopted in 1991 which provides for creation of a new residential neighborhood and employment center adjacent to the subarea, with substantial open space and water-oriented recreational development along the waterfront in the subarea from China Basin Channel to Mariposa Street. The development agreement has terminated without being implemented. However, the Area Plan and Planning Code/Zoning Map provisions remain in effect. At this time, it appears that housing and retail uses may be proposed by Catellus for its property north of China Basin Channel (designated currently for office uses). Development south of China Basin Channel, and wetlands development, is very uncertain at this time.

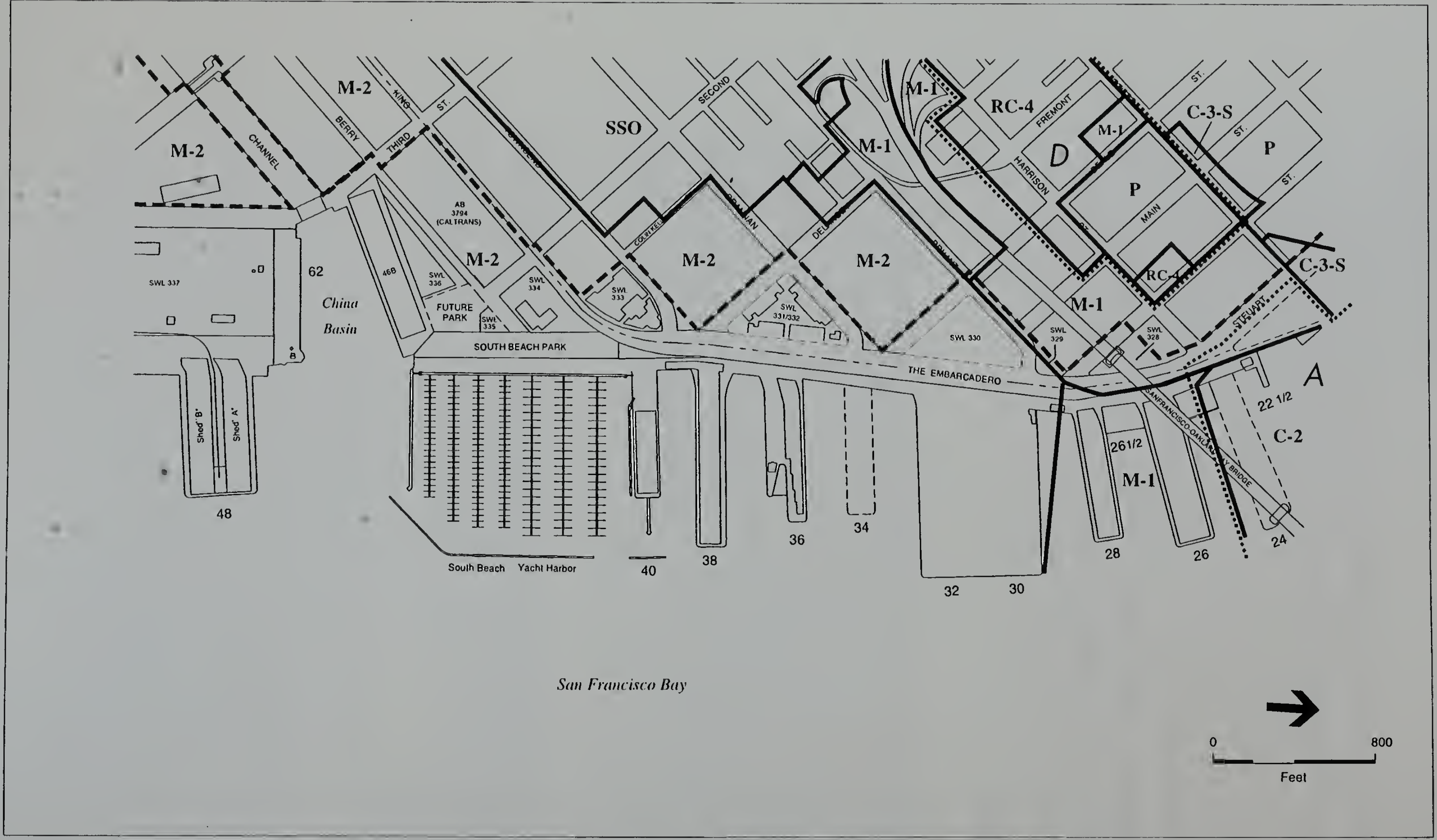
Land Uses in the Vicinity

The northern portion of the subarea is adjacent to the South Beach neighborhood, and the southern portion adjoins the Mission Bay area. In addition to the residential/mixed use development on Port land described above, a number of residential developments on adjacent properties have been completed in the South Beach area. Other than these newer developments, the predominant land uses adjacent to the Project Area are industrial, parking, and vacant open land. South of China Basin the same mixture prevails, though the activity level of the industrial uses is generally higher. Between Third and Fourth Streets along China Basin Channel is the China Basin office complex, converted from warehouse space in the 1970's and 1980's. A newer building, China Basin Landing, includes office and retail uses.

Future uses planned for Mission Bay include housing and open space/parks south of China Basin Channel, and offices north of the Channel. However, a change from planned office use to residential-retail mixed uses north of the Channel is being studied by Catellus Development Corp., Mission Bay landowner.

Zoning

This subarea is located, for the most part, in an M-2 (Heavy Industrial) District. (See Figures 18a and b for zoning.) M-2 districts are the least restricted as to use and are located at the eastern edge of the City, separated from residential and commercial areas. The heavier industries are permitted, with fewer requirements as to screening and enclosure than in M-1 Districts. Piers 22½ and 24 are within the C-2 (Community Business) zone that covers the Ferry Building subarea on the waterside and NWSUD#1. Please refer to the Fisherman's Wharf



▬ ▬ ▬ Waterfront Land Use Plan Area Boundary

- - - - - Indicates condemned piers

— - - — (North of China Basin) San Francisco Municipal Railway (MUNI) Metro Extension: A surface extension of the MUNI Metro subway light rail from Market Street south to I-280 and along King Street to Sixth Street and beyond.

SWL Seawall Lot

——— Zoning Boundary

·········· Special Use Districts Boundary

ZONING DISTRICTS

C-2	Commercial Districts
C-3-S	Neighborhood Commercial Districts
P	Public District
M-1, M-2	Industrial Districts
RC-4	Residential-Commercial Combine Districts

SPECIAL USE DISTRICTS

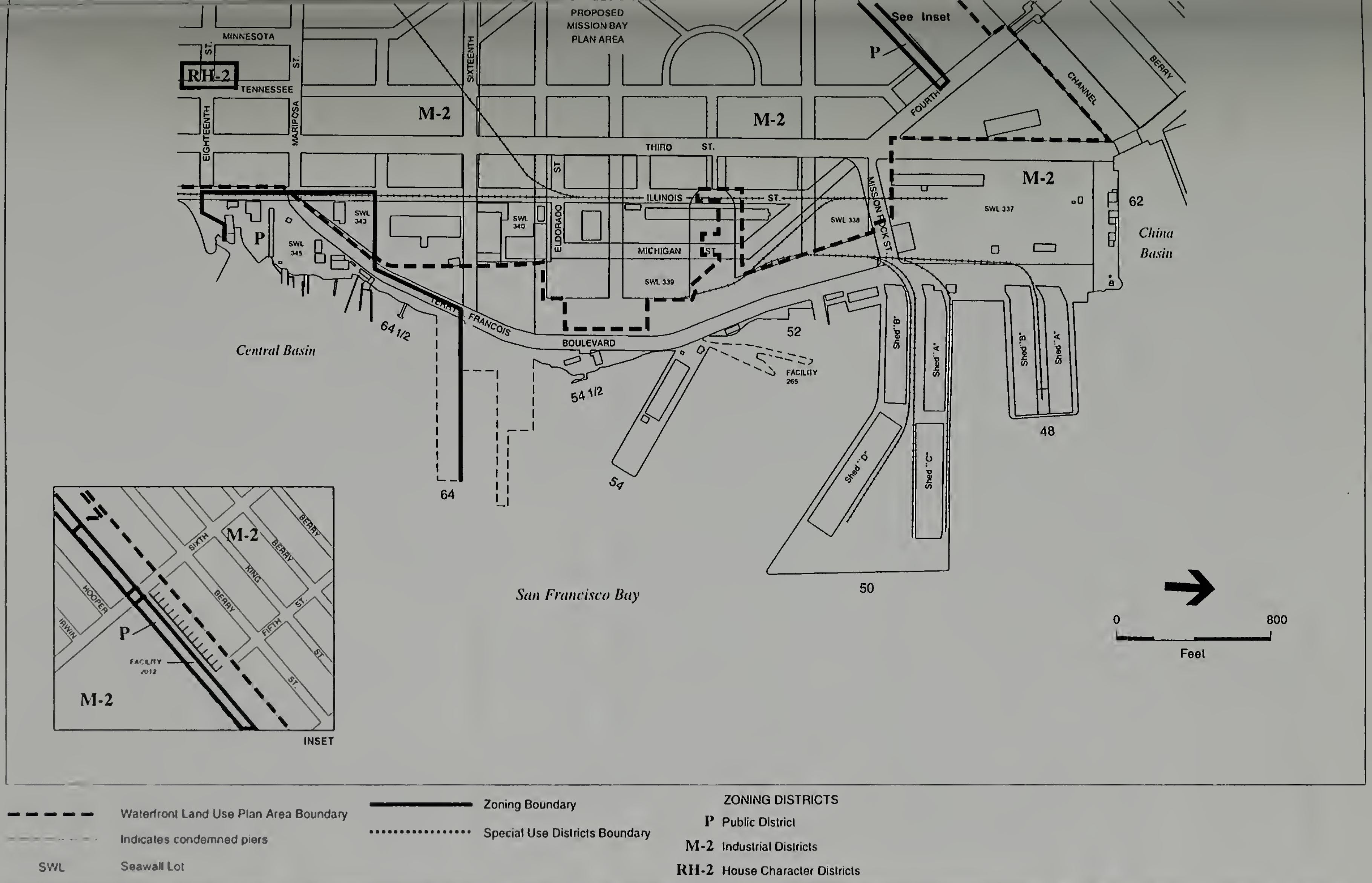
A	Northern Waterfront S.U.D. No. 1, Sec. 240.1
D	Rincon Hill Res. S.U.D. Sec. 249.1

SOURCE: San Francisco Municipal Code, June 1990.

San Francisco Waterfront Land Use Plan EIR ■

Figure 18a

South Beach/China Basin Subarea:



SOURCE: San Francisco Municipal Code, June 1990

San Francisco Waterfront Land Use Plan EIR ■

Figure 18b

South Beach/China Basin Subarea:
(Southern Portion)
Zoning and Special Use Districts

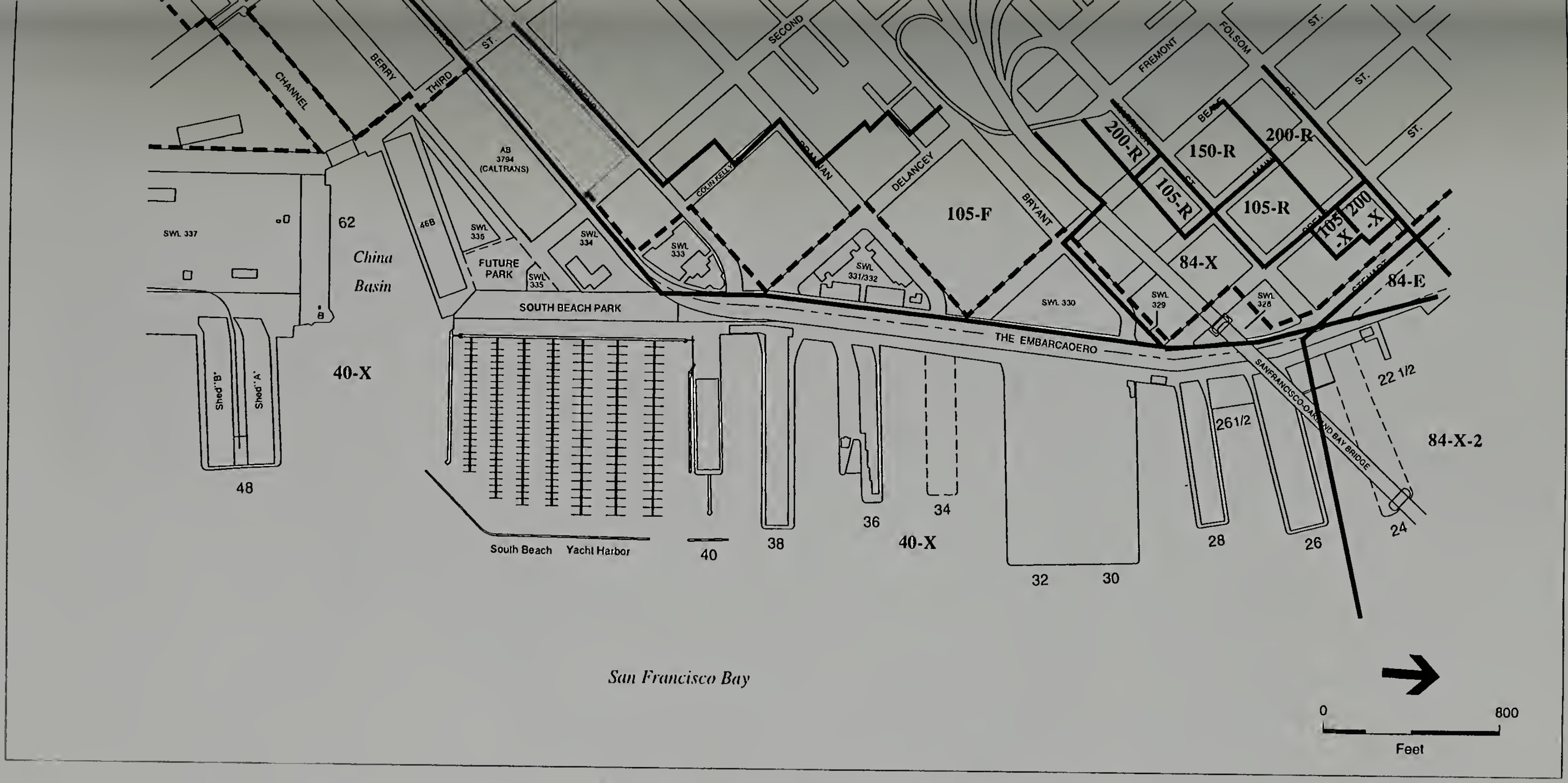
subarea zoning discussion (pp. 122-126) for information on that combination of zoning controls. Piers 26 and 28 and Seawall Lot 328 are in an M-1 (Light Industrial) zone. Seawall Lot 328 is also within the Commercial/Industrial subdistrict of the Rincon Hill Special Use District, regulated under Section 249.1 of the City Planning Code.

Seawall Lots 331, 332, 333, 334 and 335 as well as Pier 40 and the South Beach Harbor are within the Rincon Point/South Beach Redevelopment Area, under a Redevelopment Plan which controls permissible land uses regardless of zoning. The Redevelopment Plan specifies Residential with Neighborhood Commercial uses on Lots 331 and 332 and Residential uses on Lot 333, all of which have been developed. The Redevelopment Plan specifies a park and 200 parking spaces on Lots 334 and 335, which has been partially developed, and a small-boat harbor with marine support uses and parking for Pier 40 and the waterside area south to Pier 46A, which have been mostly developed.

The subarea is mostly within a 40-X Height and Bulk District (see Figures 19a and b). In this district the maximum allowable building height is 40 feet above the street. There is no requirement regarding maximum bulk. Piers 22½ and 24 and Seawall Lot 328 are within an 84-foot height district. Off-street parking and off-street freight loading spaces are required for any new uses according to the amounts shown, by use, in Sections 151 and 152 of the City Planning Code. Special parking standards may be applicable in the Rincon Point/South Beach Redevelopment Area based on the San Francisco Redevelopment Agency's "The Design for Development" for the area.

SOUTHERN WATERFRONT SUBAREA

The Southern Waterfront subarea (Mariposa Street to India Basin) extends from the shipyards at Piers 68-70 south to Pier 98, and is the location of the majority of the Port's industrial maritime uses. Total area is about 380 acres, about 60 percent of the entire Project Area. It has the only facilities for containerized cargo on the San Francisco waterfront, and the remaining concentration of water-dependent and maritime support activities, such as shipping, cargo storage and trucking services. This subarea has the least building coverage; space in buildings in the subarea totals about 1.9 million sq. ft., while about 15 million sq. ft. is open land. About 470,000 sq. ft. of the building space is occupied and in use; about 75 percent is vacant. About 5.2 million sq. ft. of the open land area is occupied and in use; another 852,000 sq. ft. of open land contains public open space/public access areas. Figures 20a and b, pp. 151-152, show the subarea and its generalized land use.



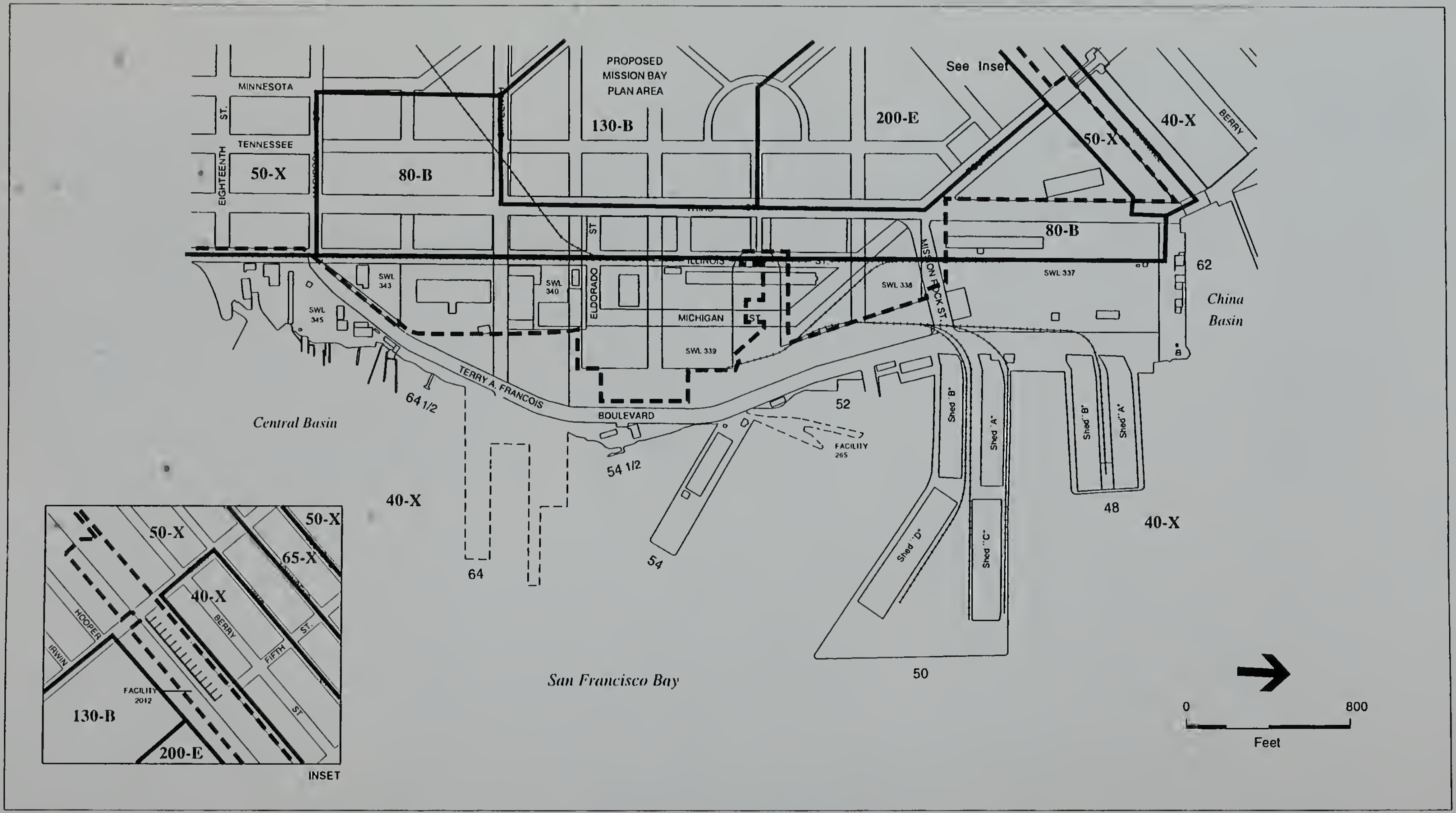
▬ ▬ ▬ ▬	Waterfront Land Use Plan Area Boundary
- - - - - - -	Indicates condemned piers
—— – – ——	(North of China Basin) San Francisco Municipal Railway (MUNI) Metro Extension: A surface extension of the MUNI Metro subway light rail from Market Street south to I-280 and along King Street to Sixth Street and beyond
SWL	Seawall Lot
▬▬▬	Height and Bulk District Boundary

HEIGHT AND BULK DISTRICTS

OS	Open Space District
00-Z-1	First Numbers are Height Limits in Feet
	Letter Symbols Refer to Bulk Limits in City Planning Code Sec. 270
	Suffix Numbers Identify Districts In which Special Regulations Apply. (See City Planning Code Secs. 263 and Following)

SOURCE: San Francisco Municipal Code, June 1990.

Figure 19a
South Beach/China Basin Subarea:
(Northern Portion)
Height and Bulk Districts



- - - - Waterfront Land Use Plan Area Boundary

- - - - - - - Indicates condemned piers

SWL Seawall Lot

—— Height and Bulk District Boundary

HEIGHT AND BULK DISTRICTS

OS Open Space District

00-Z-1 First Numbers are Height Limits in Feet

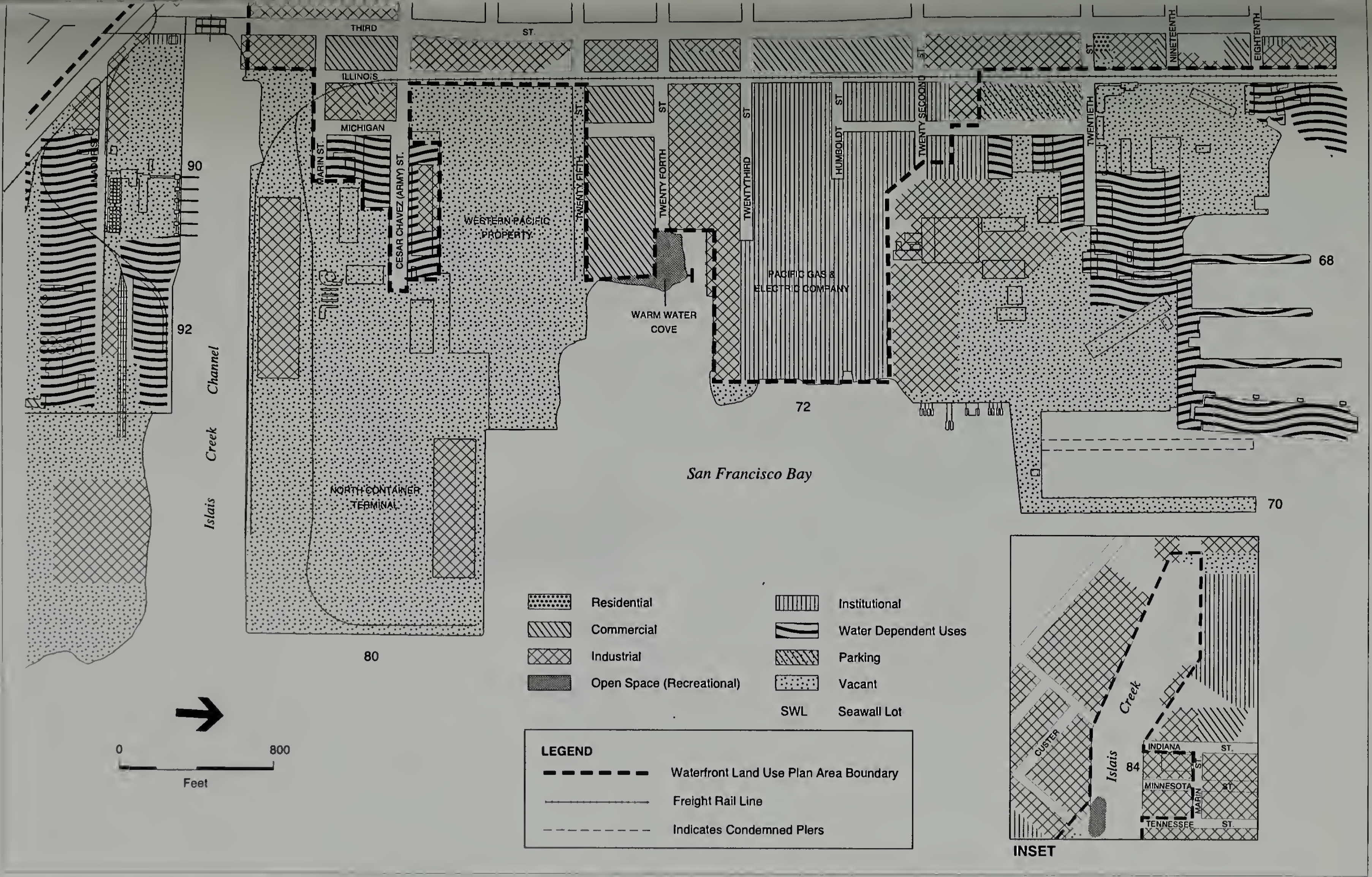
Letter Symbols Refer to Bulk Limits in City Planning Code Sec. 270

Suffix Numbers Identify Districts in which Special Regulations Apply
(See City Planning Code Secs. 263 and Following)

SOURCE: San Francisco Municipal Code, June 1990.

Figure 19b

South Beach/China Basin Subarea:

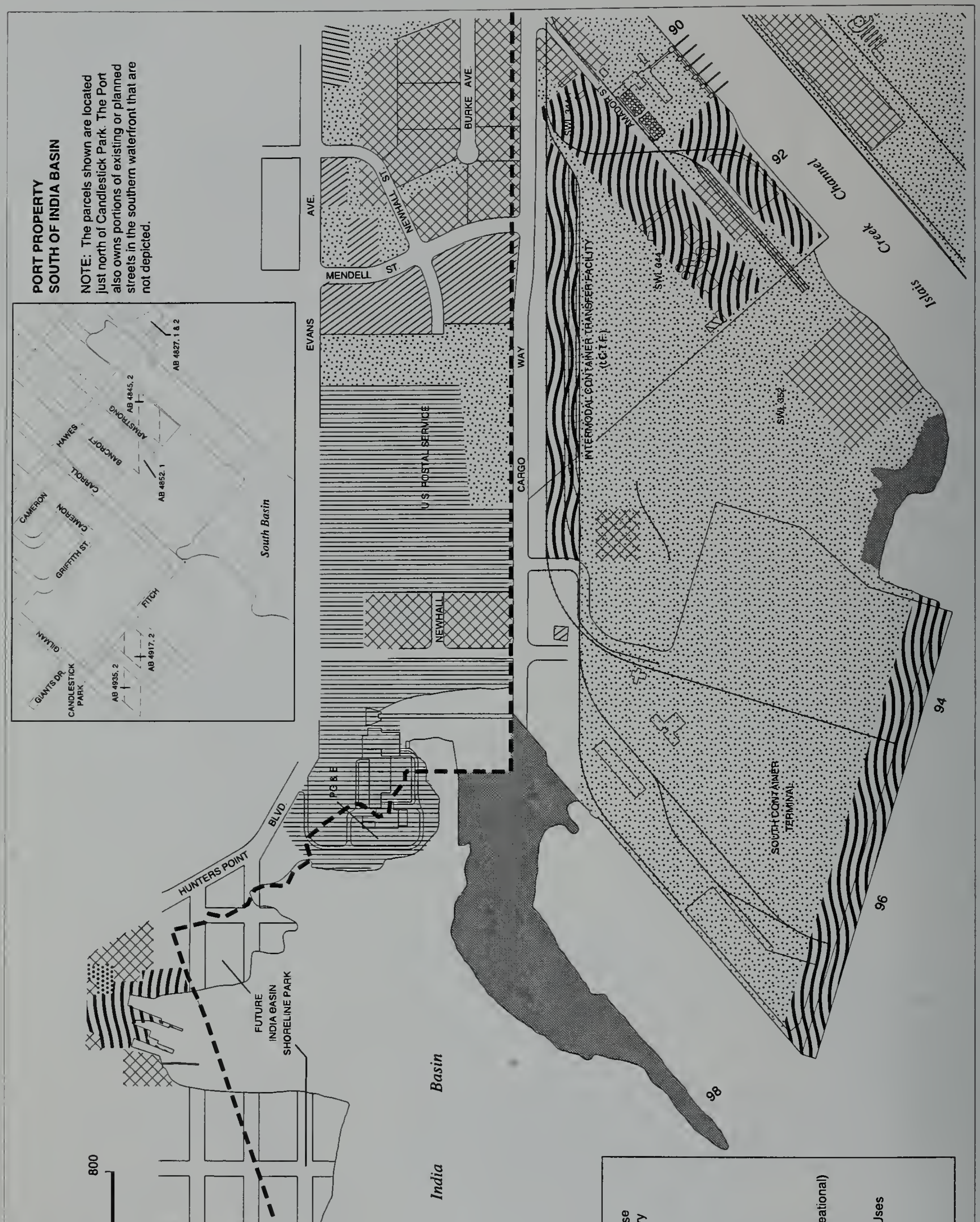


SOURCE: SMWM, 1995

San Francisco Waterfront Land Use Plan EIR ■

Figure 20a

Southern Waterfront Subarea:
(Northern Portion)
Generalized Existing Land Use



PORT PROPERTY SOUTH OF INDIA BASIN

NOTE: The parcels shown are located just north of Candlestick Park. The Port also owns portions of existing or planned streets in the southern waterfront that are not depicted.

SOURCE: SMWM, 1995

San Francisco Waterfront Land Use Plan EIR ■

Figure 20b

Southern Waterfront Subarea:

Of the 5.2 million sq. ft. of space in use in the Southern Waterfront subarea, about 70 percent is in the water-dependent uses of cargo shipping, ship repair, and maritime support. Virtually all of the remaining space is occupied by public open space, industrial and warehouse uses. A very small amount of office, parking (near 3Com Park at Candlestick Point), and retail use completes the land use picture.

The subarea contains six piers and two wharves, a railyard that extends outside of the seawall lot onto non-Port property, the Islais Creek Restoration Area, and five seawall lots. The Port has two modern, deep-water cargo terminals located at Piers 80 and 94/96, and is the only Northern California port with on-dock rail facilities for intermodal cargo. With the recent departure of the Port's larger shipping lines, the container terminals operate at approximately 2 to 5 percent of capacity. Most of the Port's properties in the southern waterfront have long been reserved for future regional expansion of maritime operations such as cargo shipping, cargo support services, and ship repair. These properties include the backlands adjacent to Pier 70, Piers 94-96, and a portion of Seawall Lots 344 and 352. Currently these facilities are vacant, unimproved, or greatly underutilized relative to their capacity. Some temporary industrial uses have been allowed on undeveloped backlands, such as metal recycling facilities on Seawall lot 344.1, a soils bioremediation operation conducted by the Department of Public Works, a radio station transmission tower, and a concrete debris recycling facility. The assembly of new MUNI light rail vehicle cars has recently been granted a lease in a Container Terminal shed at Pier 80. Portions of Pier 70 and Seawall Lot 352 are former Class III landfills subject to closure requirements by the California Regional Water Quality Control Board.

The total amount of ship repair has diminished greatly since the end of the Vietnam War. San Francisco Drydock, which operates out of Pier 70, and Service Engineering Company, which operates out of Pier 50 (in the South Beach/China Basin subarea), are the only full service ship repair companies with year-round operations remaining at the Port.

The buildings of the historic Union Ironworks, established in 1883 for the building of steel steamships and men-of-war, remain as examples of the City's earliest maritime industry. The group of buildings are located off of Twentieth and Illinois Streets at Pier 70. A number of the buildings were severely damaged in the 1989 Loma Prieta earthquake and remain vacant.

In addition to the Union Iron Works described above, the Port lands in this area contain other examples of an earlier era's industrial artifacts. There is the old Copra Tower on upper Islais

Creek. Vacant grain storage silos and elevators, also damaged in the earthquake, are located at Wharf 90, bordering on the lower Islais Creek Channel.

The Southern Waterfront subarea contains about 852,000 sq. ft. of public open space, including Warm Water Cove, Islais Creek Channel and Islais Creek restoration area, opportunistic wetlands on an attempted fill site that experienced a landslide in 1973 at Seawall Lot 352, and Pier 98 wetlands. Planned public open space totals about 719,000 sq. ft. and includes expansion and a public park plan for Pier 98 wetlands and a portion of the proposed India Basin Shoreline Park within Port jurisdiction. See Figure 23b, p. 160, for a map of public access/open space areas.

Included in the Southern Waterfront subarea are ten parcels under Port jurisdiction in the Candlestick area that are separated from the waterfront, Assessor's Block/Lot 4827/1 and 2, 4845/2, 4852/1, 4917/2, 4935/2, and four parcels in the Hunters Point shipyard. These parcels are either vacant, used for industry, or used as unpaved parking.

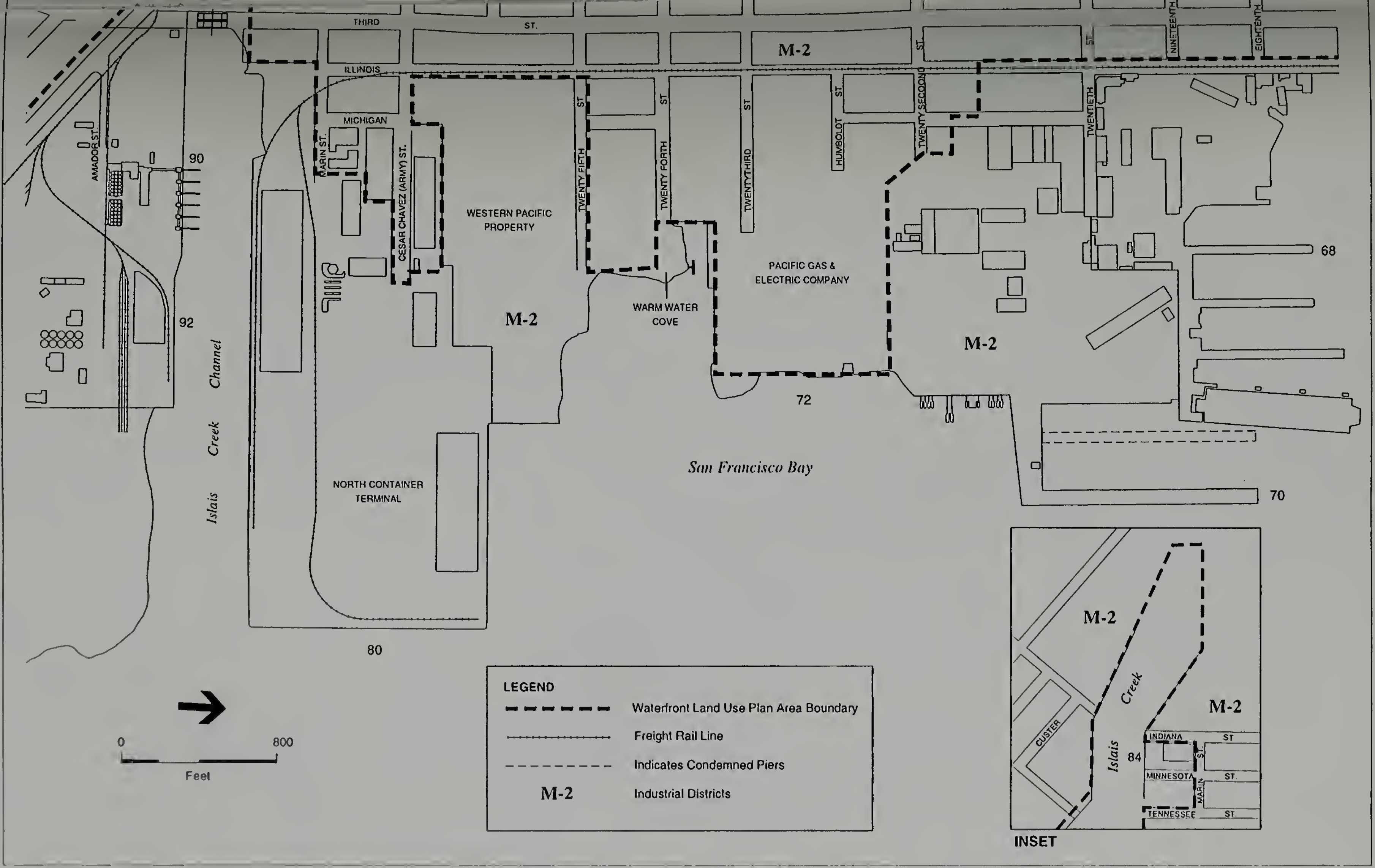
Land Uses in the Vicinity

The Southern Waterfront subarea is part of the larger heavy industrial area in southeastern San Francisco. Typical uses include manufacturing, warehousing and distribution, open storage, and recycling facilities. Pacific Gas & Electric operates a large power plant adjacent to Port jurisdiction at Pier 72.

Zoning

This subarea is located entirely within an M-2 District (Heavy Industrial). (See Figures 21a and b for zoning.) M-2 districts are the least restricted as to use and are located at the eastern edge of the City, separated from residential and commercial areas. The heavier industries are permitted, with fewer requirements as to screening and enclosure than in M-1 Districts.

The subarea is within the 40-X Height and Bulk District which is in place on most of the waterfront (see Figures 22a and b). In this district the maximum allowable building height is 40 feet above the street. There is no requirement regarding maximum bulk.

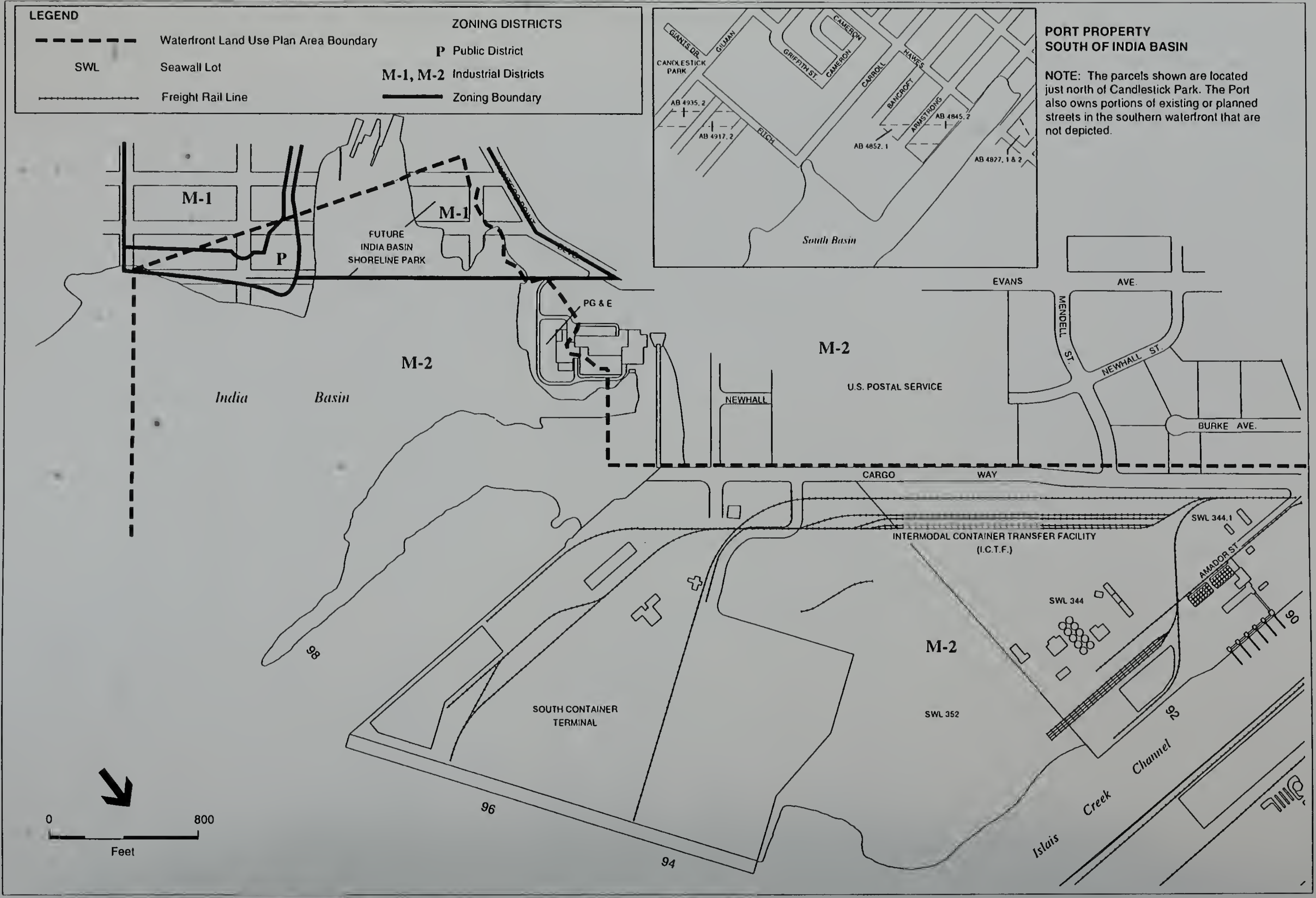


SOURCE: San Francisco Municipal Code, June 1990

San Francisco Waterfront Land Use Plan EIR ■

Figure 21a

Southern Waterfront Subarea:
(Northern Portion)
Zoning and Special Use Districts



PORT PROPERTY SOUTH OF INDIA BASIN

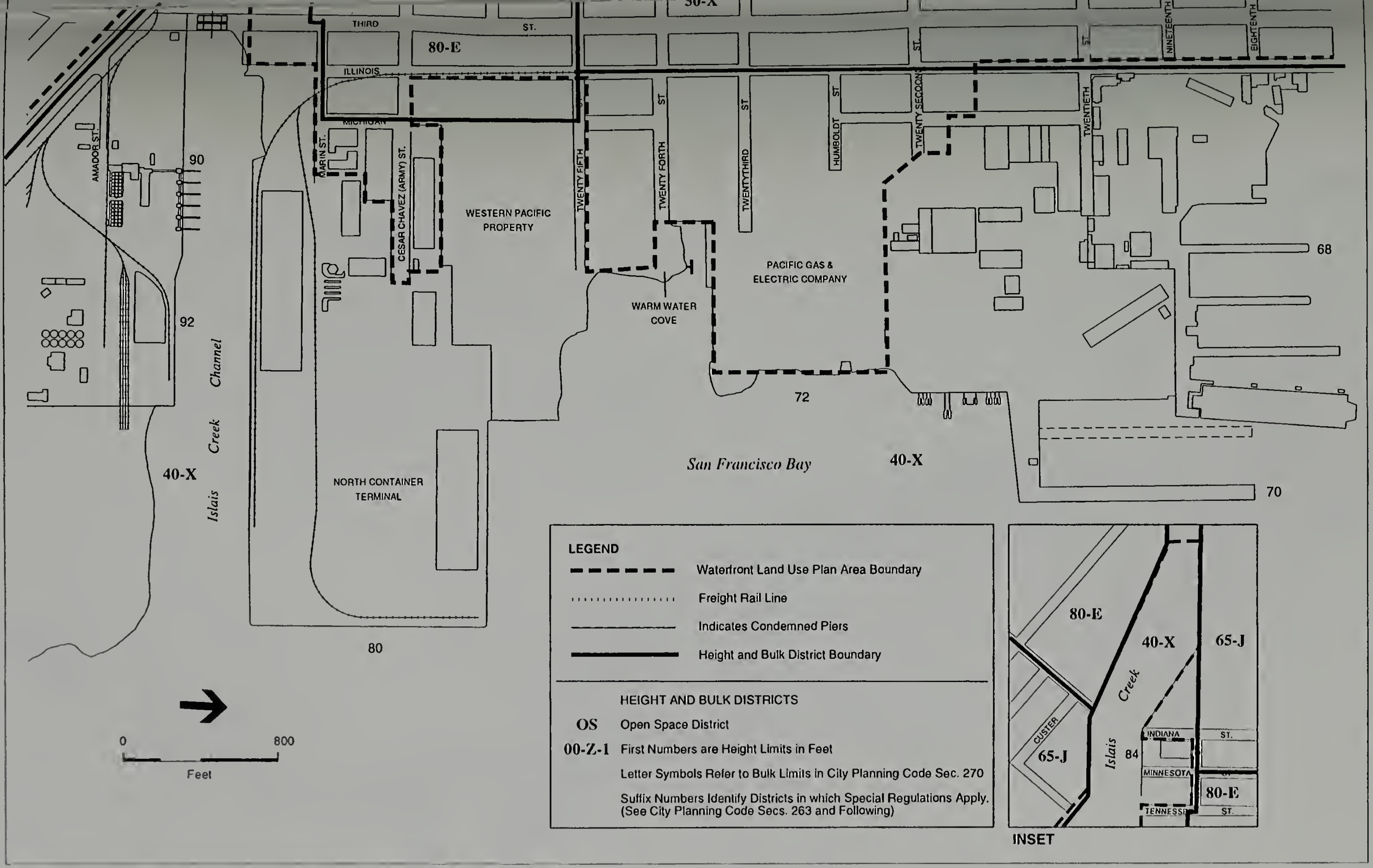
NOTE: The parcels shown are located just north of Candlestick Park. The Port also owns portions of existing or planned streets in the southern waterfront that are not depicted.

SOURCE: San Francisco Municipal Code, June 1990.

San Francisco Waterfront Land Use Plan EIR ■

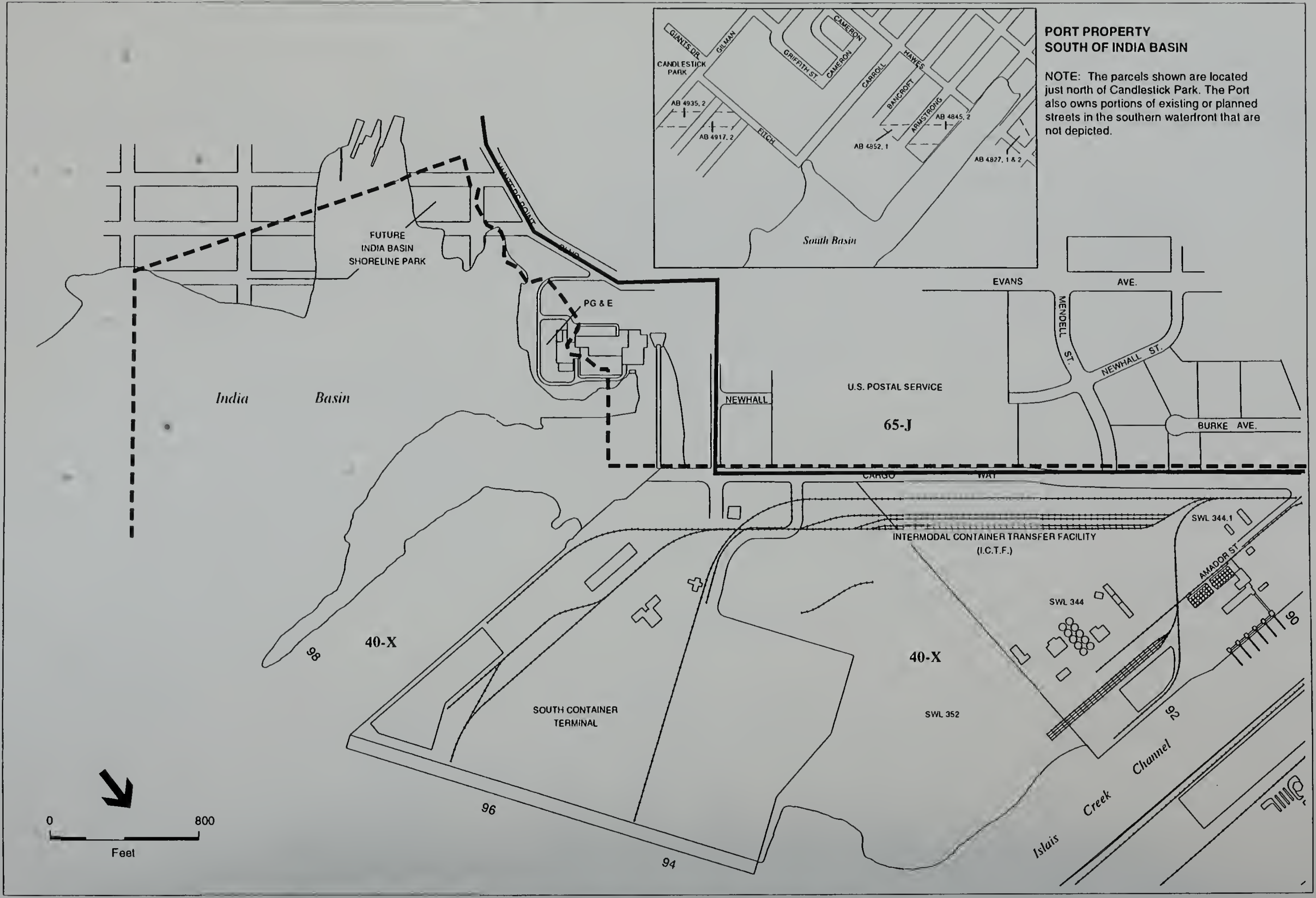
Figure 21b

Southern Waterfront Subarea:



SOURCE. San Francisco Municipal Code, June 1990

Figure 22a
Southern Waterfront Subarea:
(Northern Portion)
Height and Bulk Districts



SOURCE: San Francisco Municipal Code, June 1990.

– – – – – – Waterfront Land Use Plan Area Boundary

SWL Seawall Lot

HEIGHT AND BULK DISTRICTS

OS Open Space District

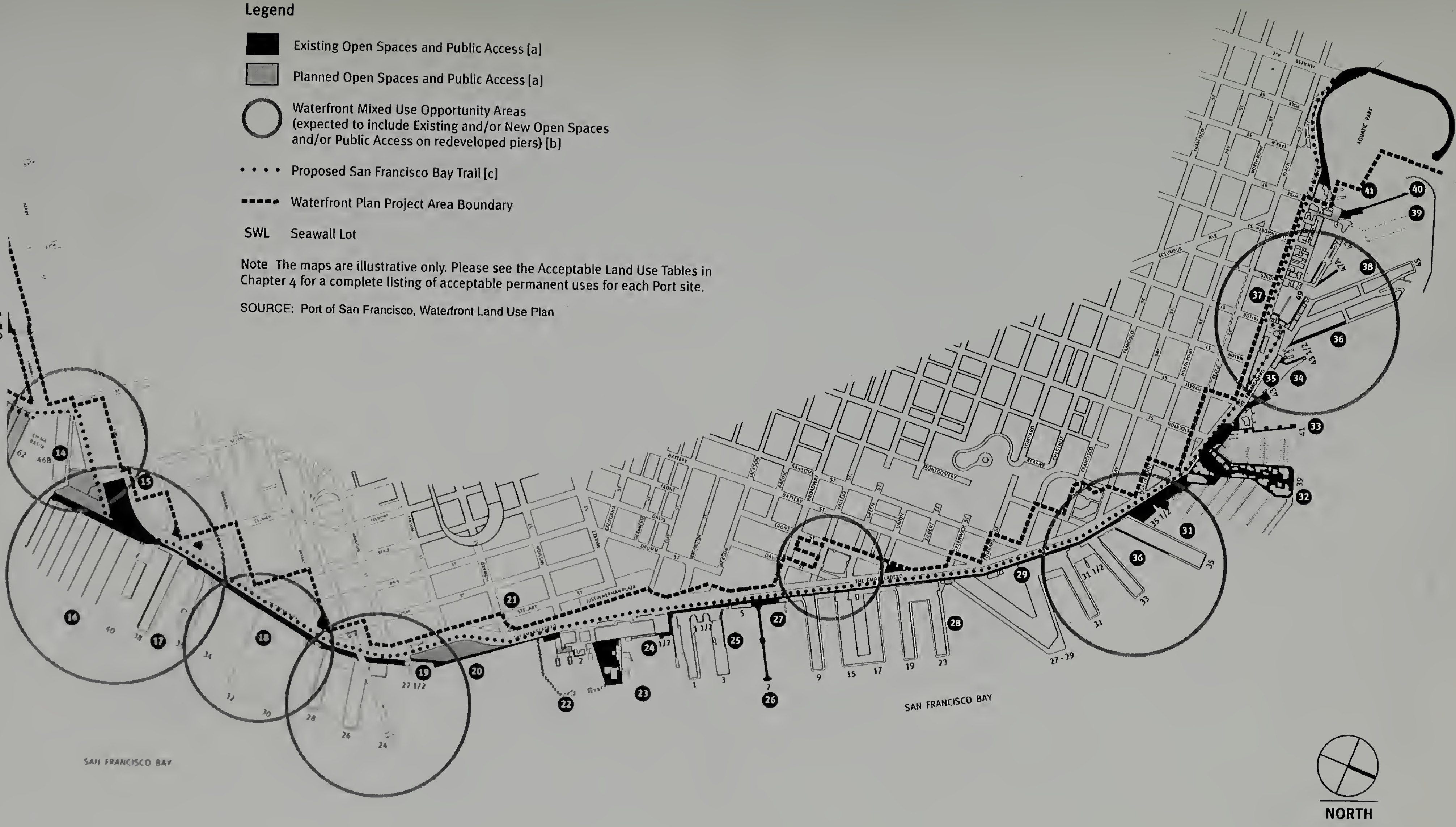
00-Z-1 First Numbers ere Height Limits in Feet

San Francisco Waterfront Land Use Plan EIR ■

Figure 22b

Southern Waterfront Subarea:

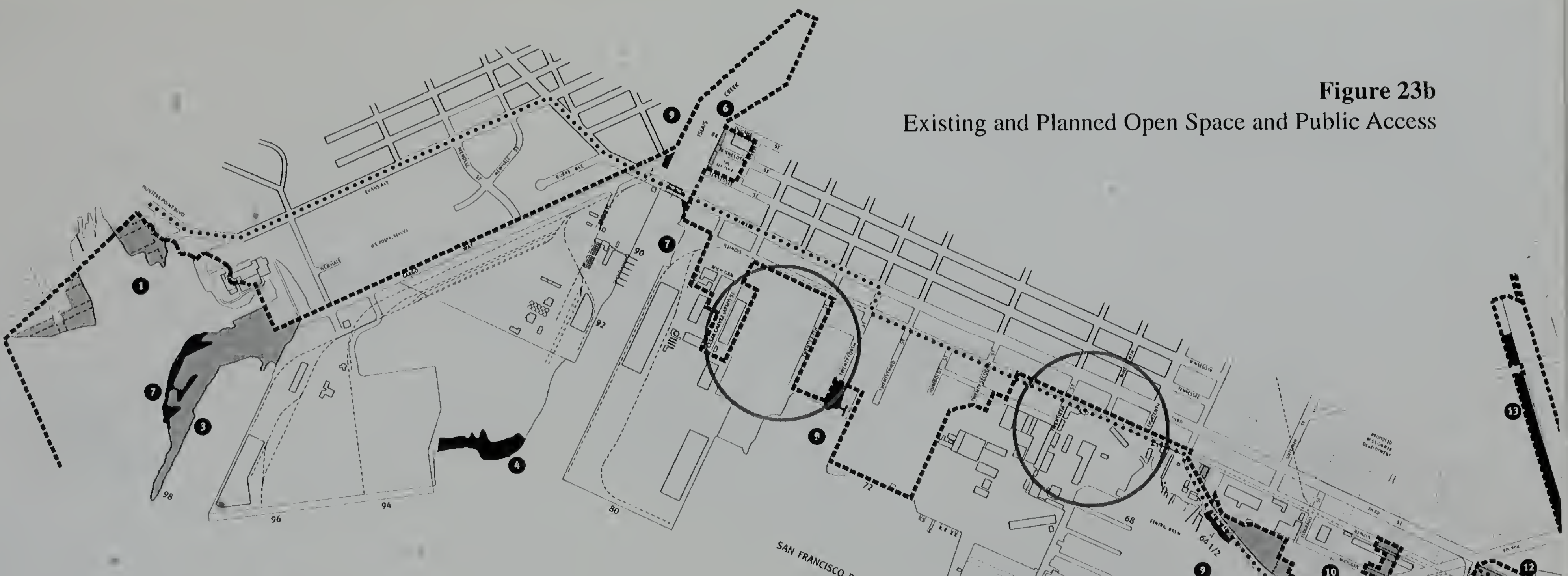
Existing and Planned Open Space and Public Access

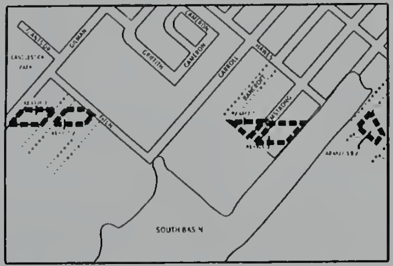


Note The maps are illustrative only. Please see the Acceptable Land Use Tables in Chapter 4 for a complete listing of acceptable permanent uses for each Port site.

SOURCE: Port of San Francisco, Waterfront Land Use Plan

Figure 23b
Existing and Planned Open Space and Public Access





Note The parcels shown above are located just north of Candlestick Park. The Port also owns portions of existing or planned streets that are not depicted.

Notes

[a] Existing and Planned Open Space and Public Access (Planned Open Spaces and Public Access sites are italicized.)

- ① *India Basin Shoreline Park*
- ② Pier 98 - Existing wetlands
- ③ *Pier 98 - Planned wetlands enhancement and passive recreation park*
- ④ SWL 344 - Existing wetlands
- ⑤ Friends of Islais Creek public access improvements
- ⑥ *Department of Public Works public access improvements*
- ⑦ Department of Public Works public access improvements
- ⑧ Warm Water Cove Park and fishing pier
- ⑨ Agua Vista Park
- ⑩ *Mission Bay Open Space*
- ⑪ Pier 52 Boat Launch and Service Engineering public access improvements
- ⑫ *Mission Bay Open Space and Wetlands*
- ⑬ Mission Creek Harbor Association public access improvements
- ⑭ *South Beach Park - Phase Two*
- ⑮ South Beach Park - Phase One
- ⑯ South Beach Yacht Harbor public access improvements
- ⑰ Pier 38 public access improvements
- ⑱ South Embarcadero Promenade
- ⑳ Embarcadero Promenade between Pier 22 1/
- ㉒ *Ferry Terminal public access improvements*
- ㉓ Ferry Plaza public access improvements and ferry passenger terminal
- ㉔ Pier 1/2 public access improvements
- ㉕ Ferry Boat Santa Rosa public access
- ㉖ Pier 7 public access and fishing pier
- ㉗ Waterfront Restaurant public access improvements
- ㉘ *Pier 23 public access improvements*
- ㉙ North Embarcadero Promenade (under construction)
- ㉚ Cruise terminal viewing deck at Pier 35
- ㉛ East Wharf Park
- ㉜ Pier 39 and Underwater World public access improvements
- ㉝ Pier 41 public access pier
- ㉞ Pier 43 and 43 1/2 public access areas
- ㉟ *Fisherman's Wharf Triangle Lot public access improvements*
- (36) Pier 45 public access near historic submarine "Pampanito"
- (37) Inner Lagoon boardwalk
- (38) Pier 47A public access
- (39) *Hyde Street Harbor access*
- (40) Hyde Street Pier historic ships
- (41) South End Rowing Club public sun deck

Off-street parking is required for industrial uses by Section 151 of the City Planning Code. In general, the Code requires one space for each 1500 square feet of occupied floor area where the occupied floor area exceeds 7,500 sq. ft. for manufacturing and industrial uses. Storage/warehouse uses, and uses that are first permitted in an M-2 district (e.g., heavier industry), are required to provide one parking space for each 2,000 sq. ft. of occupied floor area for such uses exceeding 10,000 sq. ft.

NOTES - Land Use and Zoning

1 The basic findings required to grant a conditional use are:

(1) That the proposed use or feature, at the size and intensity contemplated and at the proposed location, will provide a development that is necessary or desirable for, and compatible with, the neighborhood or the community; and

(2) That such use or feature as proposed will not be detrimental to the health, safety, convenience or general welfare of persons residing or working in the vicinity, or injurious to property, improvements or potential development in the vicinity, with respect to aspects including but not limited to the following:

(A) The nature of the proposed site, including its size and shape, and the proposed size, shape and arrangement of structures;

(B) The accessibility and traffic patterns for persons and vehicles, the type and volume of such traffic, and the adequacy of proposed off-street parking and loading;

(C) The safeguards afforded to prevent noxious or offensive emissions such as noise, glare, dust and odor;

(D) Treatment given, as appropriate, to such aspects as landscaping, screening, open spaces, parking and loading areas, service areas, lighting and signs; and

(3) That such use or feature as proposed will comply with the applicable provisions of this Code and will not adversely affect the Master Plan.

With respect to applications for development of tourist hotels and motels, the Planning Commission shall consider, in addition to the criteria set forth above:

(A) The impact of the employees of the hotel or motel on the demand in the City for housing, public transit, child care, and other social services. To the extent relevant, the Commission shall also consider the seasonal and part-time nature of employment in the hotel or motel;

(B) The measures that will be taken by the project sponsor to employ residents of San Francisco in order to minimize increased demand for regional transportation; and

(C) The market demand for a hotel or motel of the type proposed.

2 AB2659, approved by the Governor July 29, 1987.

C. POPULATION, HOUSING, AND EMPLOYMENT

PROJECT AREA

In 1995, there were 310 housing units in the Project Area, housing about 290 households and 600 residents, about 350 of whom (58 percent) were workers. All of the Project Area housing and residential population is in the South Beach/China Basin subarea. The houseboat community in China Basin Channel accounts for about 20 units and associated population. The rest of the units are in two of the new housing complexes in the San Francisco Redevelopment Agency Rincon Point-South Beach Project Area on Port property.

There were about 7,200 jobs in the Project Area in 1995. Table 7, p. 163, presents estimates of Project Area jobs in 1995 by land use and subarea. Project Area jobs are divided relatively evenly among three activities: water-dependent activities (as a group), office, and retail. Thirty percent of Project Area jobs (2,150 jobs) are in water-dependent activities; activities employing the largest numbers are maritime support, ship repair, the fishing industry, and ferries/excursion boats. Office and retail jobs also each account for about 30 percent of total Project Area jobs. The remaining 10 percent of Project Area jobs are in general industry and warehousing activities. Retail jobs are concentrated in the Fisherman's Wharf subarea, and office jobs are concentrated in the Northeast Waterfront subarea. By contrast, water-dependent jobs are more evenly distributed throughout the subareas.

PROJECT AREA IN THE CITYWIDE CONTEXT

Project Area housing and population in 1995 were very small parts of total housing and population in San Francisco (see Table 8, p. 164). The 600 people living in the South Beach/China Basin subarea represent less than one-tenth of one percent of the total population of the City in 1995. Even that amount is a relatively recent phenomenon. The South Beach housing developments were only completed and occupied after 1980.

Overall, total jobs in the Project Area are also a relatively small component of total jobs in San Francisco, representing just over one percent of the 552,000 jobs in the City in 1995 (see Table 8, p. 164). While the overall share is small, some types of Project Area jobs are particularly important in the context of the overall mix of job opportunities in the City. Water-dependent activities located in the Project Area are an important source of employment opportunities in San Francisco for blue-collar workers.

TABLE 7: PROJECT AREA JOBS BY USE AND SUBAREA, 1995

	Subarea						
Land Use	Fisherman's Wharf	Northeast Waterfront	Ferry Building	South Beach/ China Basin	Southern Waterfront	Total Project Area	Percent of Total
Non-Water-Dependent Subtotal	*1,370*	*1,790*	*660*	*820*	*400*	*5,040*	*70%*
Retail	1,020	170	220	540	20	1,970	27%
Hotel	0	0	0	0	0	0	0%
A/E/R /a/	0	0	0	0	0	0	0%
Trade, Promotion Center	0	0	0	0	0	0	0%
Office, R&D	340	1,180	430	120	30	2,100	29%
Warehouse, Light Industry	10	440	10	130	210	800	11%
General Industry	0	0	0	30	140	170	2%
Water-Dependent Subtotal	*290*	*400*	*60*	*750*	*650*	*2,150*	*30%*
Cargo Shipping	0	10	0	30	170	210	3%
Ship Repair	0	0	0	150	350	500	7%
Fishing Industry	160	60	0	130	0	350	5%
Cruise	0	10	0	0	0	10	0%
Ferry, Excursion	80	60	60	30	0	230	3%
Water Recreation	20	0	0	110	0	130	2%
Maritime Support	10	260	0	300	130	700	10%
Historic Ships	20	0	0	0	0	20	0%
TOTAL	1,660	2,190	720	1,570	1,050	7,190	100%

/a/ Assembly, Entertainment, Recreation.

SOURCE: Recht Hausrath & Associates

TABLE 8: PROJECT AREA POPULATION AND EMPLOYMENT COMPARED TO SAN FRANCISCO POPULATION AND EMPLOYMENT, 1995

	Project Area	San Francisco /a/	Project Area as Percent of City Total
Total Population	600	768,300	0.08 %
Total Jobs	7,190	552,359	1.30 %

/a/ Association of Bay Area Governments, *Projections '94.*

SOURCE: Recht Hausrath & Associates

D. TRANSPORTATION

INTRODUCTION

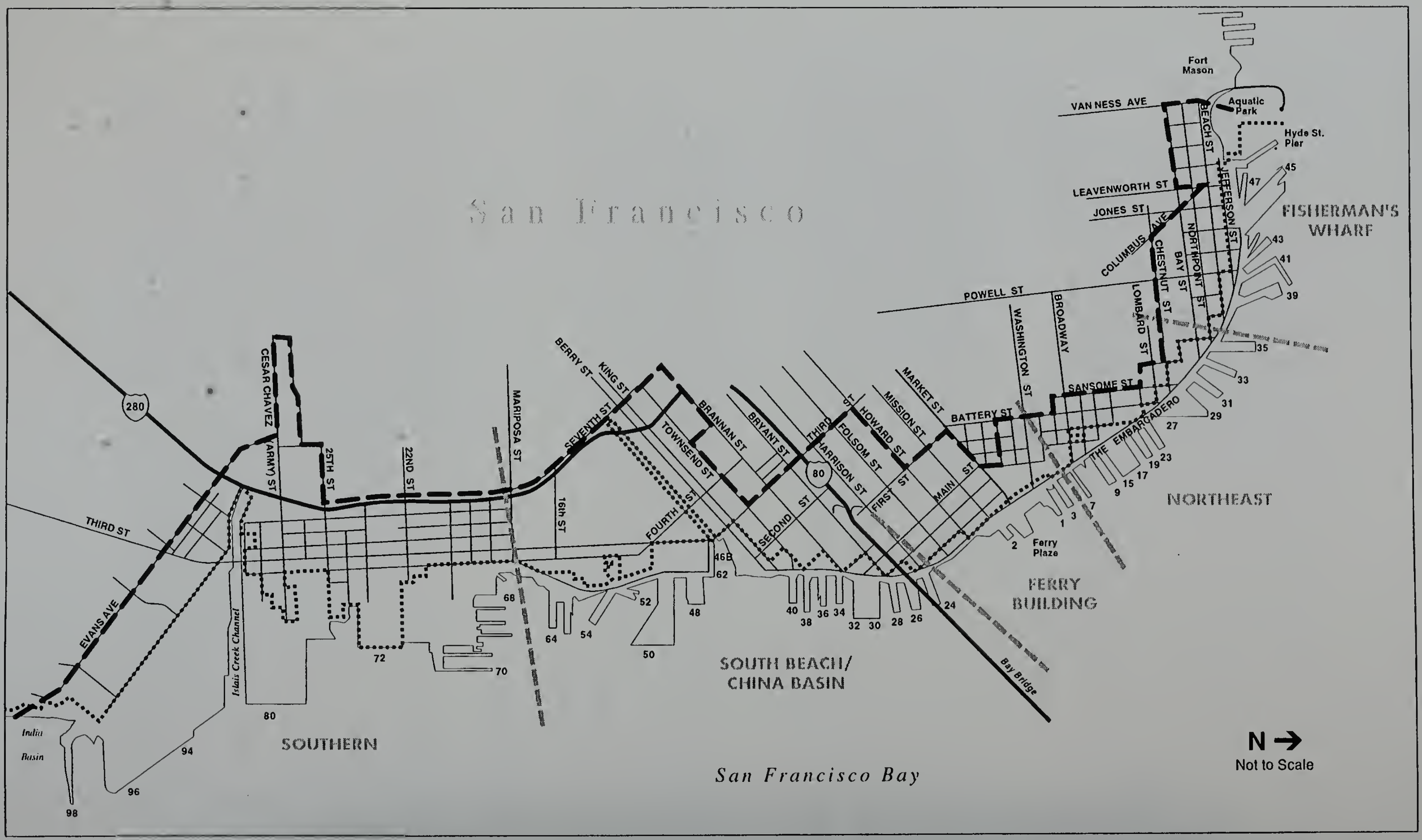
This section describes the various facilities and systems that make up the local and regional transportation network serving the Project Area. It is a complex network consisting of vehicular and traffic circulation; public transit systems, including passenger rail systems; parking; pedestrians and bicycle activities; goods movement (trucks and freight rail); and marine transportation facilities such as passenger ferries, maritime freight, recreational boating, and those associated with fishing that are unique to the waterfront.

This Setting section describes: (1) the transportation study area; (2) existing regional transportation facilities and services that directly serve San Francisco and the Port along with associated travel characteristics; (3) existing Project Area (local) transportation facilities and services within and adjacent to the Port's jurisdiction, along with related travel characteristics; and (4) transportation plans, policies and programs affecting transportation facilities and services in and adjacent to the Project Area.

This section is based on information collected and analyzed by the San Francisco Planning Department Transportation Section staff and Wilbur Smith Associates, and Pittman & Hames Associates transportation consultants. All background information, including data and calculation sheets, is available in the project files at Planning Department offices, 1660 Mission Street, San Francisco, California.

TRANSPORTATION STUDY AREA

The transportation study area as shown in Figure 24 is considerably larger than the Project Area. The transportation study area was defined to encompass the extent of the transportation network that could reasonably be affected by activity and development in the Project Area. The Project Area forms the core of the transportation study area. The Port's Waterfront Land Use Plan traverses the northern and eastern sections of San Francisco along the water's edge. For planning purposes, the Port's waterfront area has been divided into five subareas. These subareas are *Fisherman's Wharf* (from the east end of Aquatic Park to the east side of Pier 39); *Northeast Waterfront* (from Pier 35 to Pier 7); *Ferry Building* (from the Pier 5 bulkhead building to the Promenade south of the Ferry Building); *South Beach/China Basin* (from Pier 22-1/2 just north



⋯⋯ Waterfront Land Use Plan Area Boundary
(Plan Area boundary and subarea boundaries are approximate.)

NOTE: The Port also owns property south of India Basin, shown on the subarea map of the Southern Waterfront (Figure 6b).

▨ Subarea Boundary

▬ ▬ Transportation Study Area Boundary

SOURCE: San Francisco Planning Department, December 1994

Figure 24

of the Bay Bridge, to Mariposa Street, Pier 66); and *Southern Waterfront* (Piers 68 - 70 to India Basin). The description of the transportation setting and impact analysis generally reflect these five subareas.

The transportation study area, as shown on Figure 24, p. 166, extends beyond the five subareas to include areas adjacent to the Port boundaries. Travel to and from the Port's waterfront is influenced by and affects travel behavior in the nearby areas. Trips associated with the waterfront affect travel at the local level and, at a larger scale, contribute to regional travel. The transportation study area is used to define the local transportation setting and impact analysis. Transportation setting and impacts are described and analyzed at the regional and local levels. The base year for descriptions of existing facilities and operations is 1995 unless noted otherwise.

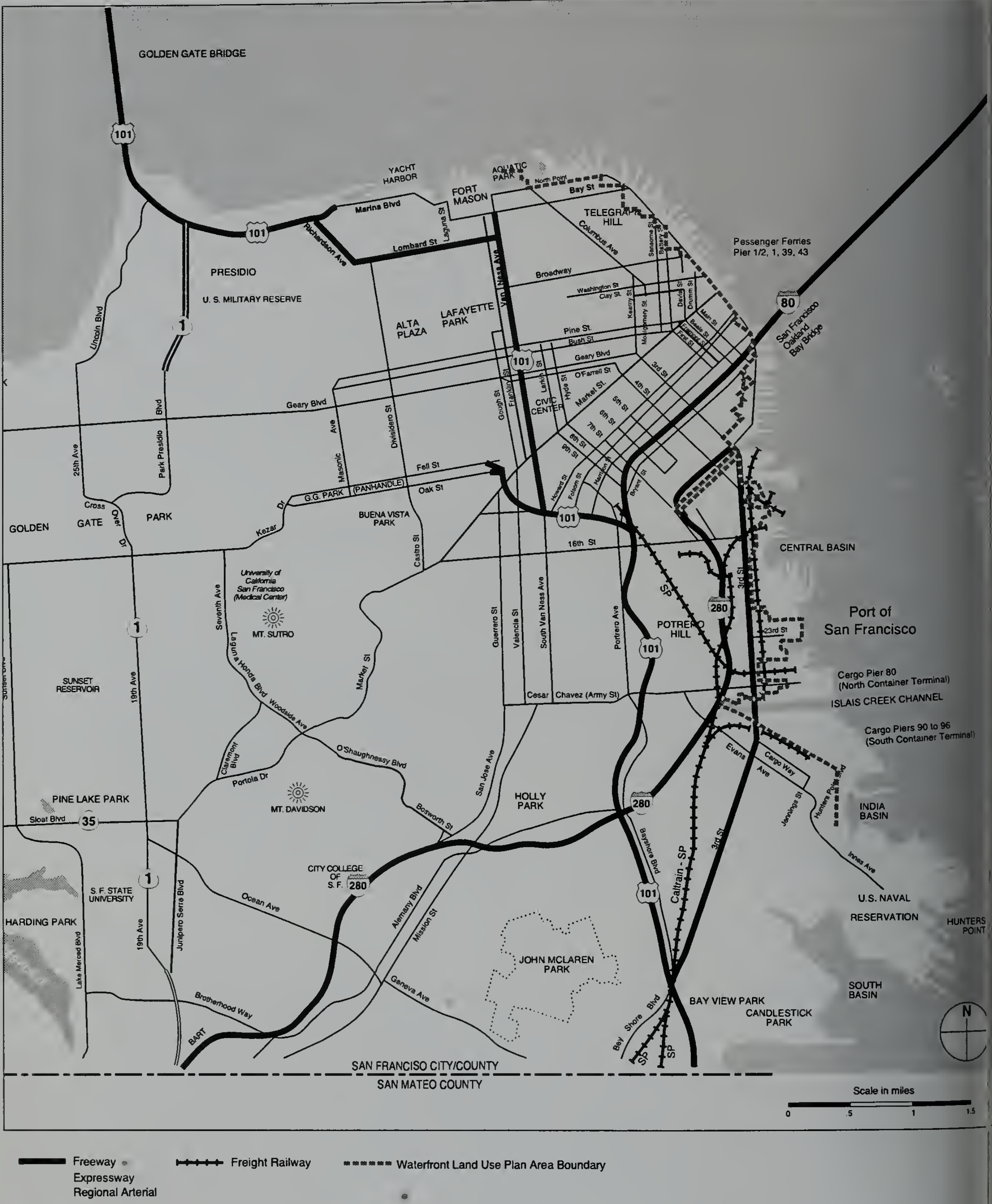
EXISTING REGIONAL TRANSPORTATION FACILITIES AND SERVICES

Regional Roadways

Travel to and from the Project Area requires the use of regional transportation facilities and services located in the vicinity of the waterfront, which link San Francisco with other parts of the Bay Area. As shown in Figure 25, the Project Area is served by three freeways: U.S. Highway 101 (U.S. 101) to and from the South Bay as well as the North Bay via the Golden Gate Bridge, Interstate 80 (I-80) to and from the East Bay via the Bay Bridge, and Interstate 280 (I-280) to and from the Peninsula and South Bay areas ending at Sixth and Brannan Streets.

U.S. 101

The Golden Gate Bridge (U.S. 101) has entrances and exits at the western ends of Marina Boulevard and Doyle Drive (from the Richardson Avenue connection with Lombard Street and Van Ness Avenue, which is the designated U.S. 101 route within the City of San Francisco). Doyle Drive carries about 91,000 vehicles per day (60,000 from Lombard/Richardson and 31,000 from Marina Boulevard). Commercial waterfront traffic accessing the Golden Gate Bridge would primarily use North Point or Bay to Van Ness, Van Ness to Lombard, Lombard to Richardson Avenue and Doyle Drive. Non-commercial traffic may use Bay Street around Fort Mason to Marina Boulevard. Marina Boulevard is a "restricted street" which prohibits through commercial vehicles.



SOURCE: Draft 1994 Regional Transportation Plan, MTC Graphics, 6/13/94, and San Francisco Planning Department

San Francisco Waterfront Land Use Plan

Figur

Regional Transportation Net

Access to and from U.S. 101 south from most of the waterfront (except the Southern Waterfront subarea) is via I-80 which merges with and ends at the U.S. 101 interchange near 10th Street and Potrero Avenue. There are no on- or off-ramps for U.S. 101 near the Project Area. Most vehicles leaving the waterfront in a southbound direction would use the I-80 on- and off-ramps at Fourth Street between Harrison and Bryant Streets and continue to the U.S. 101 south interchange. The Central Freeway on-ramps at Oak/Laguna Streets and South Van Ness Avenue, and off-ramps at Fell/Laguna Streets, Mission Street, and Ninth/Bryant Streets provide indirect access to and from the Fisherman's Wharf subarea for those traveling on U.S. 101 south. The on-ramps to U.S. 101 at Ninth/Bryant and Tenth/Bryant Streets are other indirect access points for southbound travelers from the South Beach/China Basin subarea. Southbound traffic from Mission Bay and the Southern Waterfront subarea would most likely use I-280 (rather than I-80 to U.S. 101 south) due to the number of on- and off-ramps that are more convenient to these parts of the Project Area, as described below.

I-80

In addition to the discussion above regarding I-80 access to and from U.S. 101, currently (post 1989 earthquake conditions) there are three off-ramps for westbound traffic from the I-80/Bay Bridge into San Francisco: Fremont Street between Folsom and Howard Streets (mid-block), Fremont and Harrison Streets, and Fifth and Harrison Streets. East Bay traffic to the northern waterfront may exit at the Fremont mid-block ramp, continue on Fremont to Front Street, turn left (west) at Pine or Sacramento Streets, and continue to Sansome Street north to The Embarcadero. Alternatively, a vehicle can exit at the Fremont mid-block ramp, turn right at Howard, and continue east to The Embarcadero where a left or right turn can be executed. A third alternative is to use the Fremont/Harrison off-ramp, continuing east on Harrison to The Embarcadero. The Fifth Street off-ramp does not provide for a direct route to the waterfront. The Fourth and Seventh Streets off-ramps are the only eastbound off-ramps on I-80 before entering the Bay Bridge. Exiting Project Area-bound traffic may take Bryant Street east to The Embarcadero.

The I-80/Bay Bridge eastbound on-ramps are First and Essex Streets, Sterling Street, and Fifth and Eighth Streets at Bryant. Battery to First Street is the primary access route between the waterfront north of Market Street (Fisherman's Wharf and Northeast Waterfront subareas) and I-80/Bay Bridge via the First Street on-ramp. The Essex and Sterling Street ramps are also used.

The on-ramp at Fifth and Bryant is not normally used by Project Area traffic. Fourth Street is the only I-80 westbound on-ramp near the Project Area.

I-280

Interstate 280 (I-280) is located south of I-80 and east of U.S. 101. I-280 provides access from the South Beach/China Basin and Southern Waterfront subareas to areas south of San Francisco, and is closer to these subareas of the waterfront than U.S. 101. I-280 parallels U.S. 101 until crossing it at the interchange at Alemany Boulevard, where I-280 then follows a southwest direction through the City to points south on the Peninsula. On-ramps from the waterfront include Sixth/Brannan Streets, Mariposa/Pennsylvania Streets, and Pennsylvania/Cesar Chavez (Army) Streets. Off-ramps to these waterfront subareas include Cesar Chavez (Army) Street, Eighteenth/Mariposa Streets, Fourth and Brannan, and Sixth and Brannan Streets. I-280 north of U.S. 101 was closed following the October 17, 1989, earthquake, and was partially reopened to one lane in each direction in April 1993. The full reopening of I-280 for access to and from the downtown area occurred in December 1995.

Existing Regional Transportation Operating Conditions

Regional Roadways

The analysis of operating conditions on the bridges and freeways serving the San Francisco waterfront is based on regional data and information developed by the Metropolitan Transportation Commission (MTC) and the California Department of Transportation (Caltrans). One indicator of traffic performance is the volume-to-capacity (v/c ratio). This ratio indicates how much of the capacity of the roadway segment is being used by the traffic volume. A value close to 1.0 would normally (under ideal conditions) indicate near saturation conditions (roadway at 100 percent capacity); while a value in the mid-range, i.e., 0.5, indicates that only 50 percent of the segment's capacity is used, and the balance is available for additional traffic growth. In the San Francisco urban context, a v/c value in the range of 0.92 to 0.95 would represent, in practical terms, that the facility is operating at its effective capacity (see Appendix F for further discussion of v/c ratios). Table 37, presented in the Impacts Section, p. 468, reports the volumes/capacities (v/c ratios) for the bridges and freeways serving the Project Area. During the P.M. peak hour, the Golden Gate Bridge northbound operates at near capacity, with a v/c ratio of 0.91. The Bay Bridge eastbound currently operates at a v/c of 0.80, indicating some reserve capacity on the Bridge itself. The approaches to both bridges are also operating at capacity in the P.M. peak including the on-ramps for eastbound I-80 (Bay Bridge). These ramps include First and Essex Streets at Harrison Street, and Fifth and Sterling Streets at Bryant. The Sterling Street on-ramp and the Bryant Street approaches to the ramp operate as high occupancy vehicle (HOV) approaches and on-ramp during the P.M. peak travel period, allowing only automobiles with three or more occupants and motorcycles to use these facilities. All ramps operate at capacity during the P.M. peak hour, with traffic waiting to enter the Bay Bridge queuing on surface streets such as First, Fourth, Harrison and Folsom Streets.

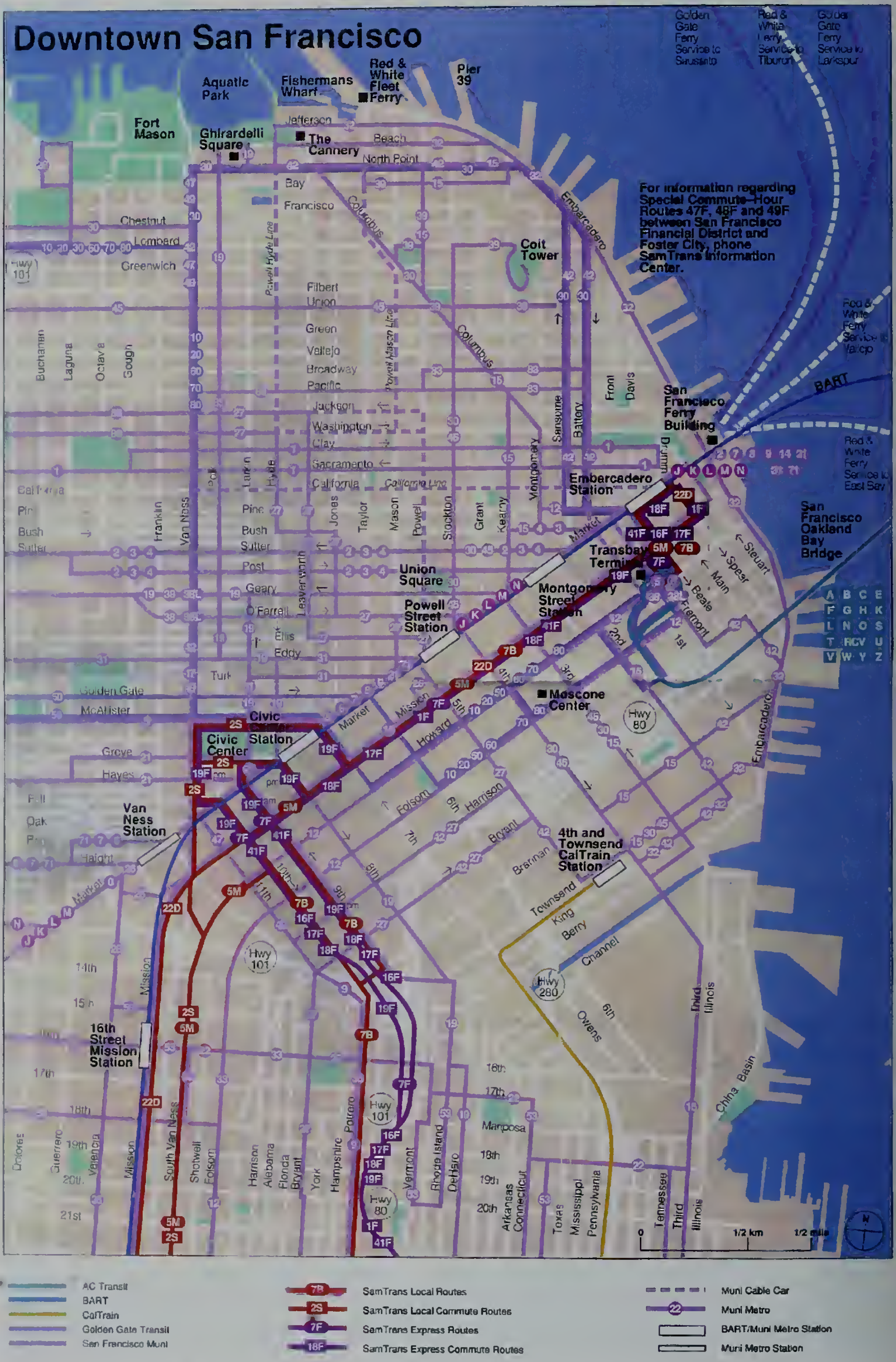
The two approaches to the Golden Gate Bridge, Doyle Drive (U.S. 101) from the east and Park Presidio Boulevard (Highway 1) from the south, operate at congested levels during the P.M. peak travel period. Traffic begins to back up from the toll booth plaza south due to the need to reduce speed and maneuver through the lane configuration changes required to pass through the toll booth plaza and adjust to the P.M. peak hour expanded lane configuration (from three to four lanes) on the bridge.

U.S. 101 and I-280 at the San Francisco/San Mateo County line operate at v/c ratios of 0.68 and 0.90, respectively, at the San Francisco/San Mateo County line. I-280 north of the County line at the Alemany Boulevard interchange with U.S. 101 experiences saturated conditions due to, additional traffic from U.S. 101 merging to southbound I-280 in the P.M. peak hour. Southbound traffic does not experience as much delay closer to the San Francisco/San Mateo County lines; however, congested conditions still persist in the P.M. peak hour.

Regional Transit Service

San Francisco is served by a variety of regional transit systems and operators including bus, train and ferry. Figure 26 shows the current routes and regional transit operators which provide service to portions of the Project Area. Following is a discussion of the transit operators and the services provided.

BART. The Bay Area Rapid Transit District (BART) provides rail rapid transit service in San Francisco, Alameda, and Contra Costa Counties. In addition, northern San Mateo County is provided with end-of-the-line BART service at Colma. End-of-the-line service is provided in Contra Costa County at Richmond and North Concord. In Alameda County, end-of-the-line service is located at Fremont. BART has an Embarcadero Station which provides service to the



SOURCE: SamTrans Bus Route Map, May 1994.

San Francisco Waterfront Land Use Plan

Figu

Regional Transit Se

Ferry Building subarea of the waterfront. This is the only location along the waterfront directly served by BART.

Current seating capacity for BART trains leaving The Embarcadero Station in the P.M. peak hour bound for the East Bay (as reported by BART) is approximately 12,960 seats. With current ridership at The Embarcadero Station at 14,573, the existing load factor is 1.12 compared to BART's maximum load factor policy of 1.15. For trains bound for the Peninsula (Daly City end-of-the-line), the maximum load point is at the Civic Center Station. The outbound seating capacity in the P.M. peak hour at the Civic Center Station is 8,640, compared to average ridership of 7,576 (0.88 load factor). There is excess capacity on the weekends and during off-peak weekday travel times.[1]

CalTrain. CalTrain, the Peninsula corridor passenger rail service, extends from the San Francisco terminal at Fourth and Townsend Streets south through San Mateo and Santa Clara Counties, terminating in the City of Gilroy. The Peninsula Corridor Joint Powers Board (JPB), with representatives from San Mateo, Santa Clara and San Francisco Counties, administers the operation of the regularly scheduled passenger rail service. The National Railroad Passenger Corporation, Amtrak, is the current operator of CalTrain, under an operating agreement with the JPB. CalTrain operates 59 weekday trains between San Francisco and San Jose. In addition, four commute trains serve the Gilroy area. CalTrain also operates 25 trains on Saturday and 20 trains on Sundays and holidays. In San Francisco, CalTrain connects directly with Muni, which then provides connections to Golden Gate Transit, BART, and AC Transit at the Transbay Terminal and Market Street.

Sixty percent of CalTrain passengers disembark in San Francisco, with 80 percent traveling during the peak hours. According to CalTrain's *June 1995 Short Range Transit Plan*, service levels currently meet the ridership demands. In the P.M. peak hour, CalTrain ridership is approximately 2,300 with scheduled seating capacity at 3,800.[2]

AC Transit. The Alameda-Contra Costa Transit District (AC Transit) operates transbay bus service between western Alameda and Contra Counties to downtown San Francisco. Some of AC Transit's transbay routes are in service all day; however, the majority of the service is oriented to the commute time periods. AC Transit's only San Francisco terminus is at the Transbay Terminal located at First and Mission Streets. Current eastbound seating capacity (at the Transbay Terminal) in the P.M. peak hour is approximately 4,000 scheduled seats with approximately 2,200 riders, a 0.55 load factor reflecting reserve seating capacity.[2]

SamTrans. The San Mateo County Transit District (SamTrans) provides regional and local bus services in San Mateo County and portions of San Francisco. SamTrans operates all-day local and local commute routes along with express and express commute peak-period routes to downtown San Francisco, with the terminus at the Transbay Terminal. Local service has additional stops, including bus stops along Mission Street. Currently, SamTrans service has a scheduled seating capacity of approximately 1,800 seats and 1,300 riders in the P.M. peak hour, resulting in a 0.72 load factor indicating reserve capacity.[2]

Golden Gate Transit. The Golden Gate Bridge Highway and Transportation District (Golden Gate Transit) operates and provides a variety of transit and ride-sharing modes between Sonoma and Marin Counties to downtown San Francisco. Golden Gate Transit operates buses and ferries and organizes subscription bus and van pools. Golden Gate Transit operates commuter and basic bus service along Doyle Drive, Beach and North Point Streets, Sansome and Battery Streets, Folsom and Howard Streets, Seventh and Eighth Streets to McAllister and Golden Gate between Hyde and Webster, Geary Boulevard between Webster and Park Presidio, and Van Ness Avenue, as shown in Figure 26, p. 172. Transfer points for Golden Gate Transit include the Golden Gate Bridge Toll Plaza, Richardson and Lyon Streets, the Port of San Francisco Ferry Building, Transbay Terminal, and Seventh and Market Streets. Golden Gate Transit buses have available capacity with 3,600 scheduled seats and 2,800 riders in the P.M. peak hour.[2]

Passenger Ferry Service. Passenger ferry service is provided by several operators including Golden Gate Transit, the Blue and Gold Fleet, Alameda-Oakland Ferry (operated by the Blue and Gold), and Harbor Bay Maritime. Golden Gate Transit provides service from the ferry docks located at the Ferry Building to Sausalito and Larkspur. The Blue and Gold provides ferry trips between Pier 1/2 (Ferry Building subarea) and Tiburon. The Alameda-Oakland Ferry provides service between Jack London Square in Oakland and Main Street in Alameda on the Estuary (west end of Alameda) to Piers 1/2 and 39 (Fisherman's Wharf subarea), while Harbor Bay Maritime operates ferry service between Pier 1/2 and Harbor Bay Island in Alameda (east end). In addition, there is recreational ferry service offered in the Fisherman's Wharf subarea at Piers 39, 41, and 43½. All ferry services have excess capacity.

LOCAL TRAVEL CHARACTERISTICS, TRANSPORTATION FACILITIES AND SERVICES

The Project Area is served by a variety of local transportation modes, services and facilities. Local streets, transit, pedestrian, and freight movement are discussed in the following paragraphs.

Street Network

As shown on Figure 24, p. 166, the Project Area is traversed by The Embarcadero, a major arterial, from the Fisherman's Wharf subarea south to the China Basin subarea. In and near the Fisherman's Wharf and Northeast Waterfront subareas, major arterials which connect The Embarcadero with the rest of the City and the region include Van Ness Avenue, Bay and North Point Streets, and Leavenworth, Jefferson, Sansome and Battery Streets.

In the Ferry Building subarea, Broadway and Washington Street are arterials connecting with The Embarcadero north of the Ferry Building. Mission Street connects with The Embarcadero south of the Ferry Building. Mission Street is a transit conflict street, which is defined in the Transportation Element as a street with a primary transit function, is not classified as an arterial, and experiences conflicts with automobile traffic. Folsom Street operates as an arterial and connects with The Embarcadero at the southern end of the Ferry Building subarea and the northern end of the South Beach/China Basin subarea.

In addition, the South Beach/China Basin subarea north of China Basin Channel is served by Harrison, Bryant, Brannan, and Townsend Streets connecting to The Embarcadero. King Street has been reconstructed between The Embarcadero and Third Street, in preparation for future service as the primary connection with I-280. South of the Channel, Third Street performs as a major north/south arterial for the southern portion of China Basin and the Southern Waterfront. Mariposa, Sixteenth, Cesar Chavez and Evans Streets connect the Southern Waterfront.

Baseline Traffic Conditions at Key Intersections

The baseline traffic characteristics described in this Setting section represent conditions as they existed before construction activities for The Embarcadero roadway and transit improvements began. Pre-construction conditions better represent the existing (normal operation) setting than the construction conditions, which substantially altered traffic volumes, turning movements and/or geometry at many study intersections. In addition, the multiple phases of construction in

1994-1995 created continually changing traffic conditions, making it impossible to characterize a single roadway setting against which project impacts could be analyzed. In order to develop the setting, traffic counts were obtained from previous studies which were prepared prior to the construction along The Embarcadero, while other counts at intersections not affected by construction were collected more recently.

The average traffic conditions were determined for the weekday P.M. peak hour and Saturday midday peak hour. To analyze existing intersection levels of service, turning movement volumes were collected at 24 study intersections for the P.M. peak hour and at approximately half of the study intersections on Saturday midday peak hour. Intersections deemed critical or representative of traffic volumes and congestion were selected by Planning Department staff for weekday P.M. peak hour analysis based upon professional judgment and understanding of the travel characteristics in the waterfront area. Intersections were selected for Saturday midday peak hour analysis based upon the same factors; however, it was determined that not all 24 intersections analyzed for the weekday P.M. peak period warranted Saturday midday analysis. New counts were collected for ten of the intersections in August 1994. Volumes for the remaining intersections were obtained from other existing sources.

Level of service (LOS) is also used to describe how an intersection operates. The method used for the intersection analysis generally defines LOS in terms of delay. Delay is the amount of time an average vehicle must wait before being able to pass through the intersection. This concept is based on a letter designation from LOS “A” to “F” which signifies very low to excessive delay (over 60 seconds) conditions. An LOS of “D” (with delay in the range of 25 to 40 seconds) is considered the minimum acceptable operating condition for urban San Francisco streets. Further detail of the LOS methodology is found in Appendix F.

The study intersections and the baseline LOS are shown in Table 9. Figures 27a through 27g, pp. 178-184, present the service levels for the existing weekday conditions and the existing Saturday midday traffic conditions. Detailed LOS analysis sheets are located in the project files at the San Francisco Planning Department.

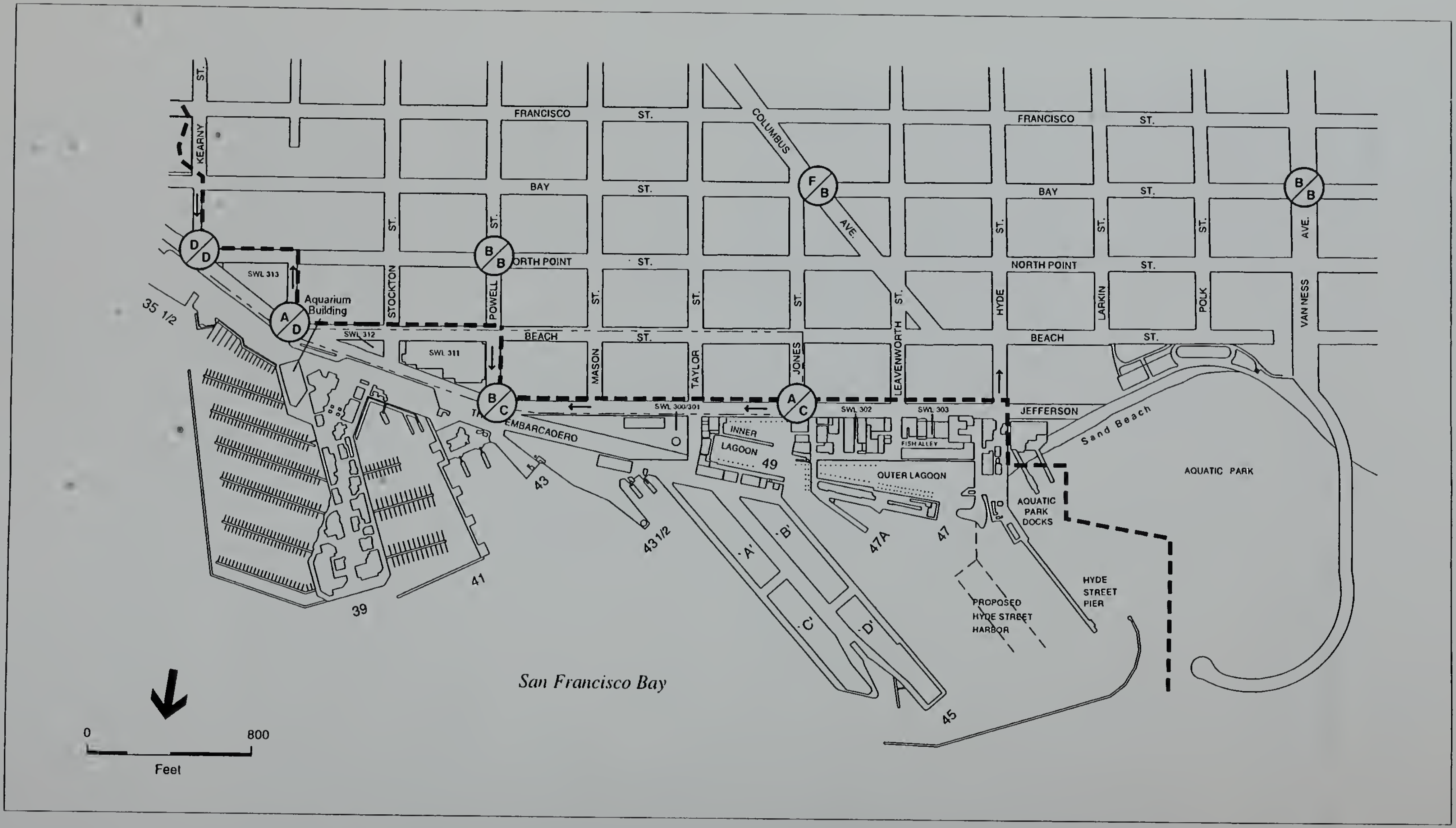
[text continued on p. 185]

TABLE 9: EXISTING INTERSECTION LEVELS OF SERVICE

Intersection	P.M. Peak Hour Delay/a/	P.M. Peak Hour LOS	Saturday Midday Delay/b/	Saturday Midday LOS
1. Bay St. at Van Ness Ave.	10.0	B	11.4	B
2. Bay St. at Columbus Ave.	191.7	F	8.4	B
3. Jefferson St. at Jones St./c/	3.4	A	10.5	C
4. North Point at Powell St/c/	6.5	B	7.4	B
5. Jefferson St. at Powell St.	9.6	B	18.8	C
6. Embarcadero at Beach St./d/	--	A	--	D
7. Embarcadero at North Point St./c/	25.8	D	20.4	D
8. Embarcadero at Bay St.	22.6	C	18.6	C
9. Embarcadero at Sansome St.	21.0	C	18.4	C
10. Embarcadero/Battery St./ Lombard St./d/	--	F	--	E
11. Embarcadero at Broadway	20.9	C	32.2	D
12. Embarcadero at Washington St.	10.1	B	6.0	B
13. Embarcadero at Mission St.	5.0	A	N/I	N/I
14. Embarcadero at Folsom St.	11.4	B	N/I	N/I
15. Embarcadero at Harrison St.	47.3	E	7.5	B
16. Embarcadero at Bryant St./d/	--	F	N/I	N/I
17. Embarcadero at Brannan St./d/	--	F	N/I	N/I
18. Third St. at King St./d/	--	F	N/I	N/I
19. Fourth St. at King St./d/	--	C	N/I	N/I
20. Third St. at Sixteenth St.	7.3	B	N/I	N/I
21. Third St. at Mariposa St.	6.3	B	N/I	N/I
22. Third St. at Twenty-fifth St.	5.7	B	5.0	A
23. Third St. at Cesar Chavez St.	15.7	C	15.6	C
24. Third St. at Evans St.	21.3	C	N/I	N/I

/a/ Delay = Delay in seconds/vehicle.
/b/ N/I = Not included in the analysis.
/c/ All-Way STOP sign controlled intersection.
/d/ LOS is for minor approach (Lombard, Beach, Bryant, Brannan and King Streets) only. The major streets (The Embarcadero, Third and Fourth Streets) do not STOP or YIELD, and were observed to be operating at an acceptable level of service.

SOURCE: Wilbur Smith Associates, May 1995



San Francisco Municipal Railway (MUNI) F-Line: An extension of the F-Line from Market Street north to Fisherman's Wharf, featuring the City's historic streetcar collection.

Waterfront Land Use Plan Area Boundary

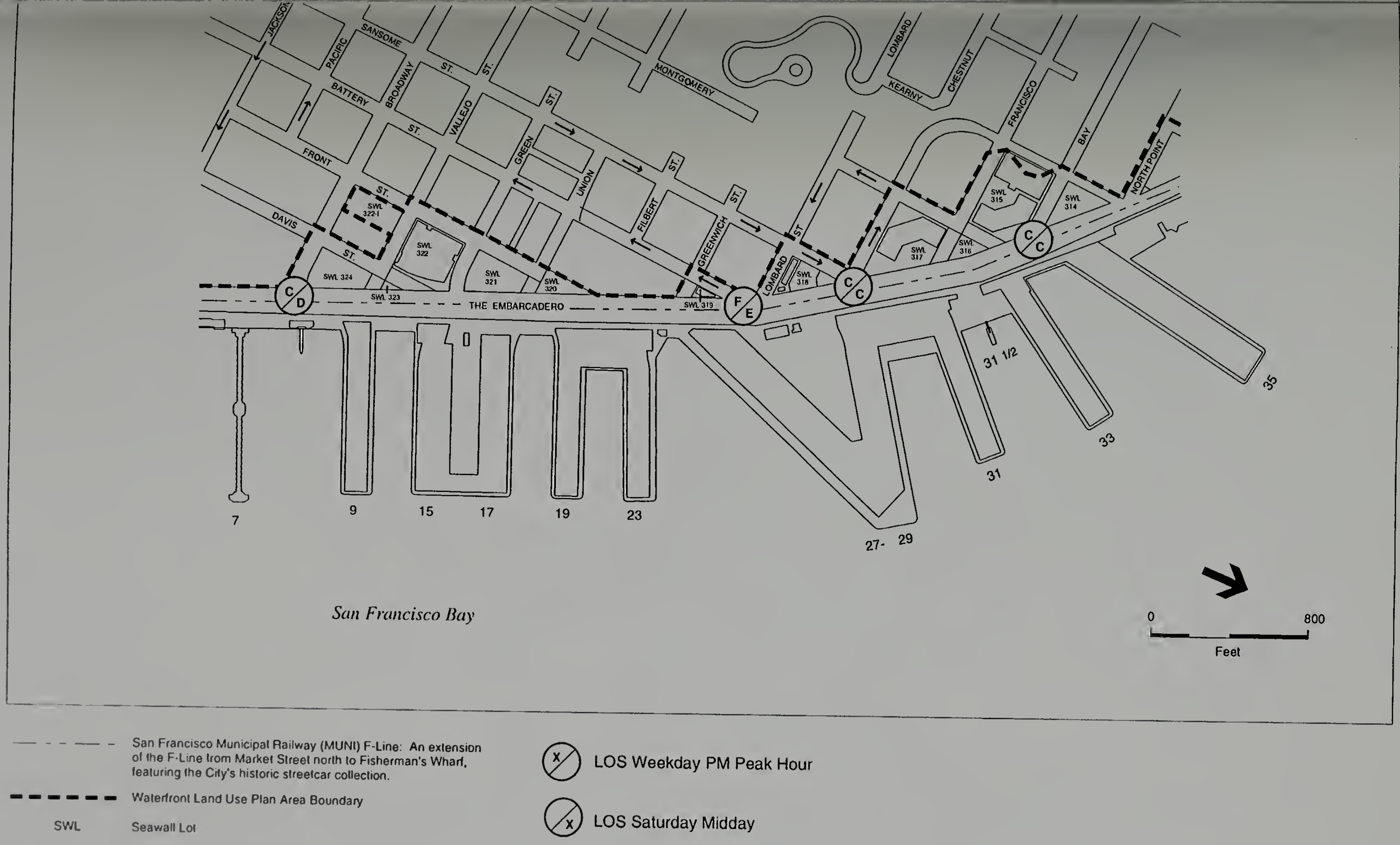
SWL Seawall Lot

X/ LOS Weekday PM Peak Hour

/X LOS Saturday Midday

SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

Figure 27a

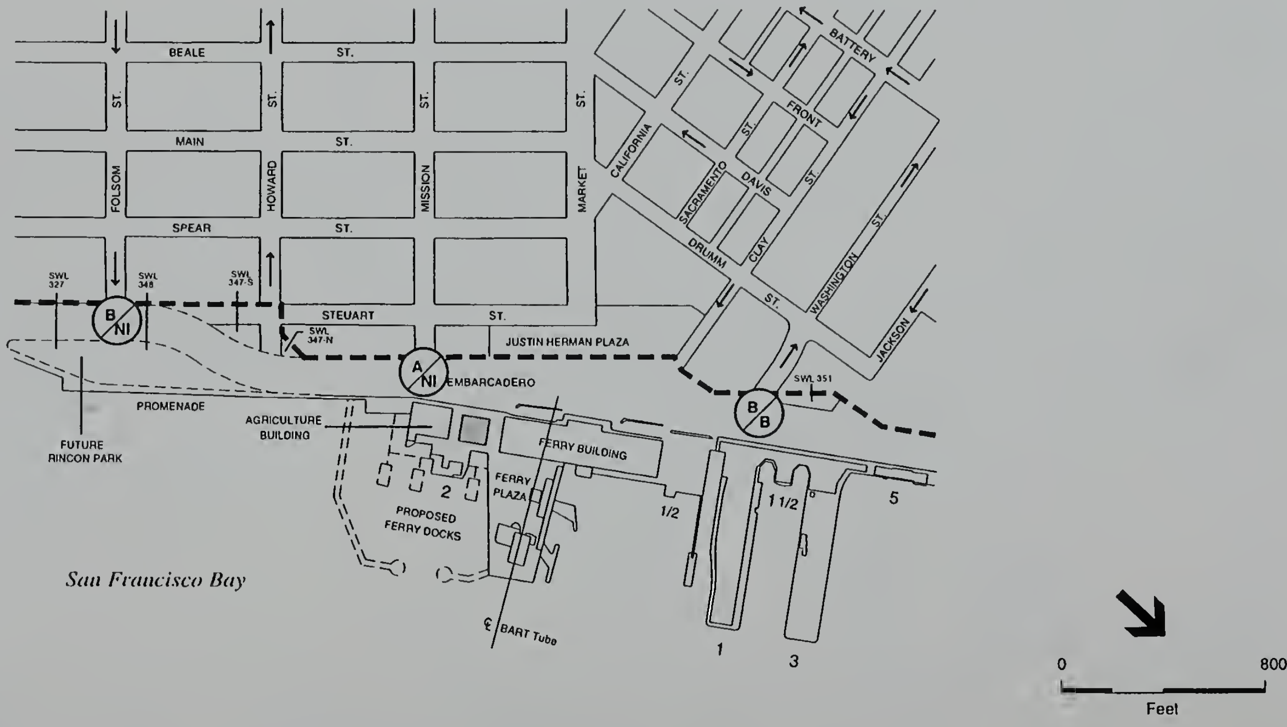


SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and
San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 27b

Existing Intersection Levels of Service
Northeast Waterfront Subarea



- - - - Waterfront Land Use Plan Area Boundary

SWL Seawall Lot

(X/) LOS Weekday PM Peak Hour

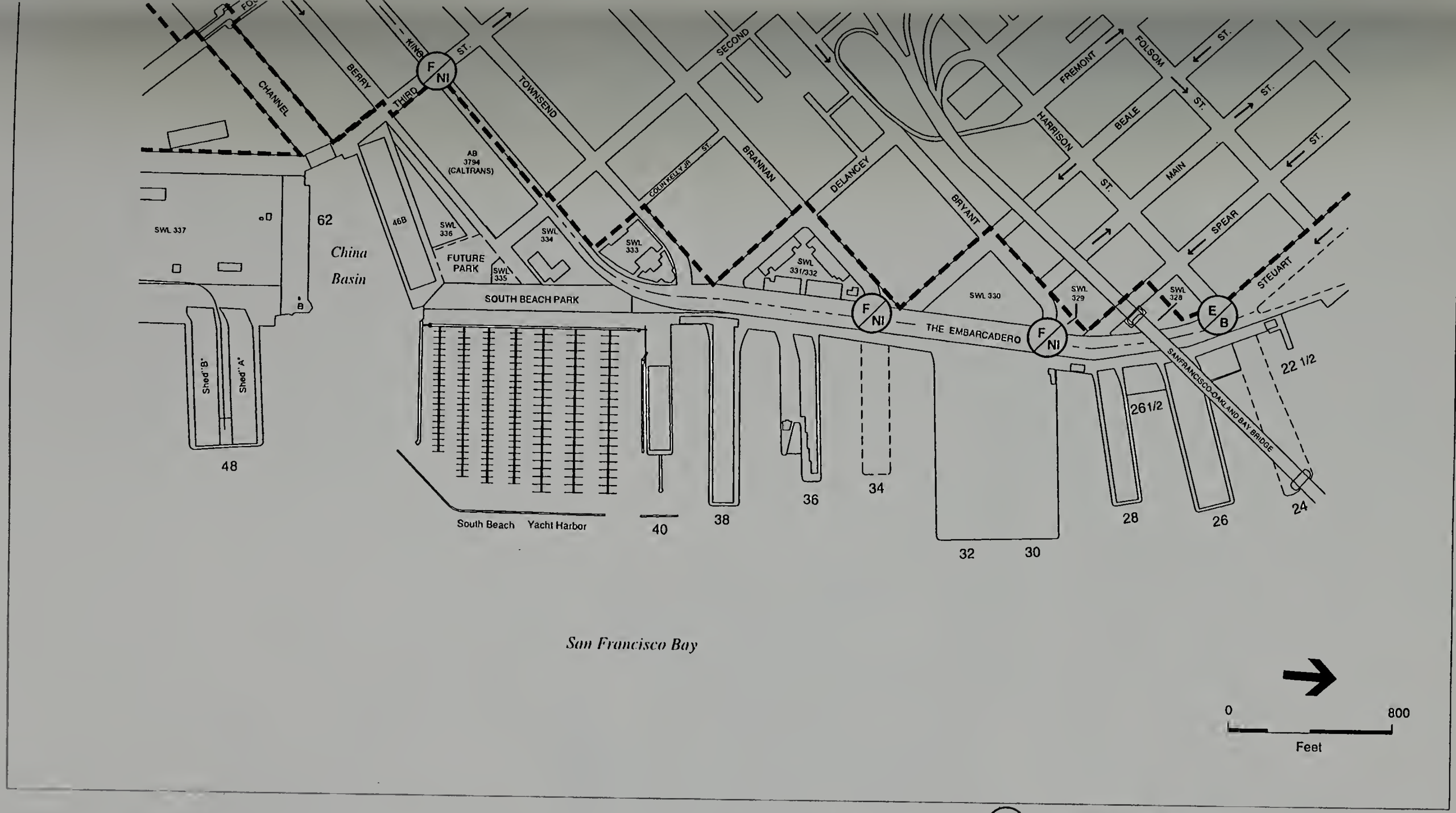
(/X) LOS Saturday Midday

NI Not Included in analysis

SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

Figure 27c

Existing Intersection Levels of Service



▬ ▬ ▬ Waterfront Land Use Plan Area Boundary

- - - - - - - Indicates condemned piers

—— - - —— (North of China Basin) San Francisco Municipal Railway (MUNI) Metro Extension: A surface extension of the MUNI Metro subway light rail from Market Street south to I-280 and along King Street to Sixth Street and beyond.

SWL Seawall Lot

X/ LOS Weekday PM Peak Hour

/X LOS Saturday Midday

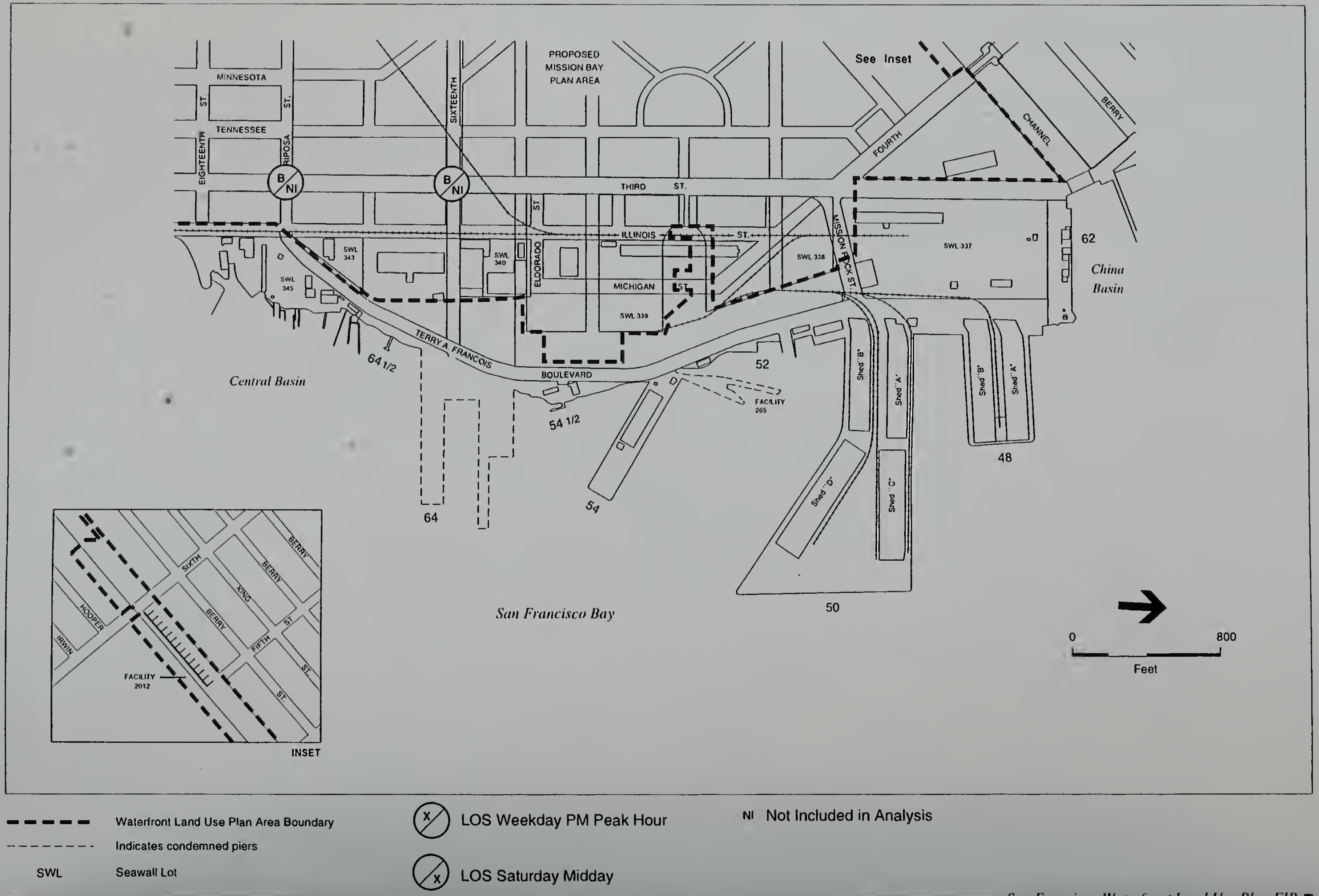
NI Not Included in analysis

SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 27d

Existing Intersection Levels of Service
South Beach/China Basin Subarea

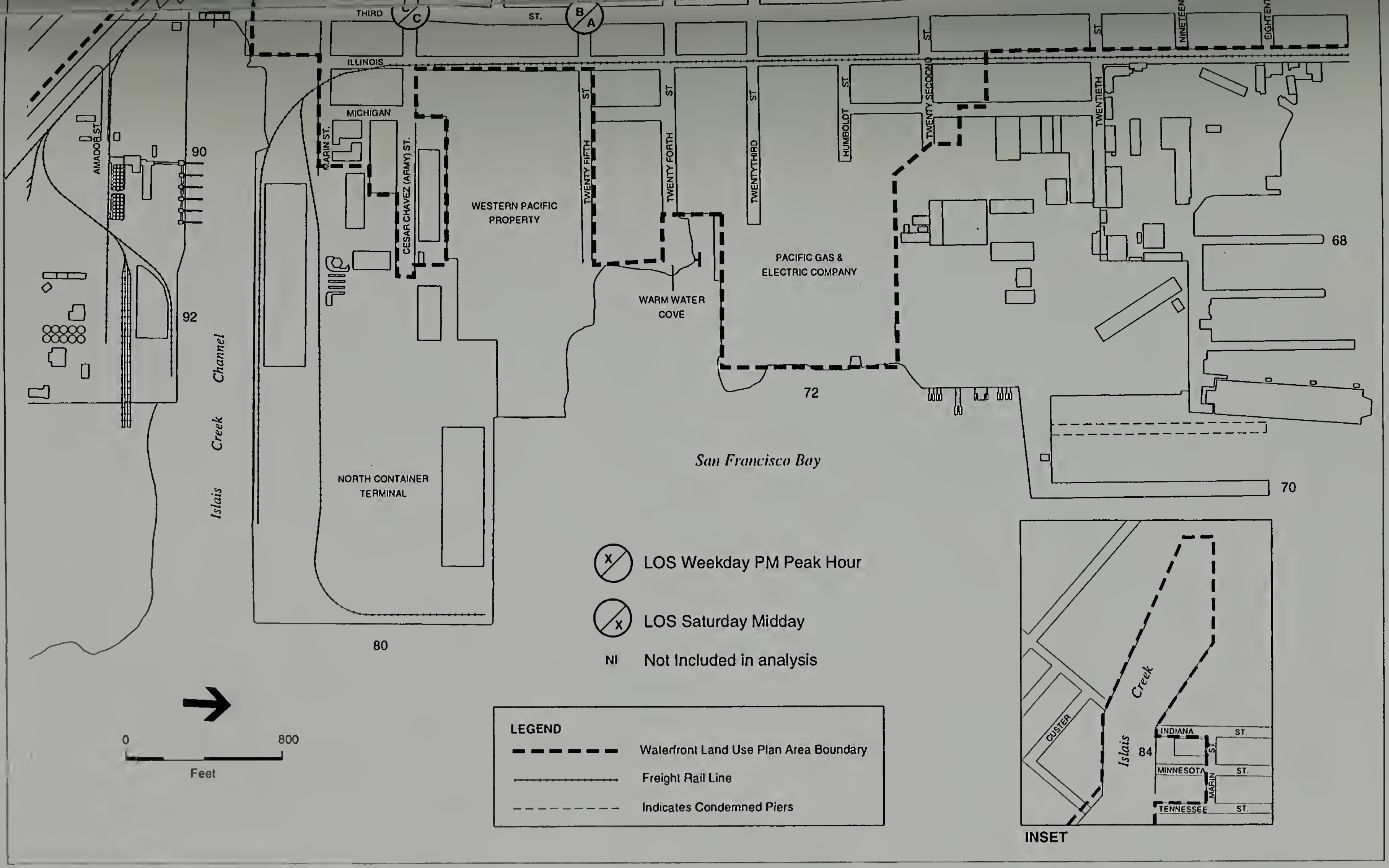


SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 27e

Existing Intersection Levels of Service

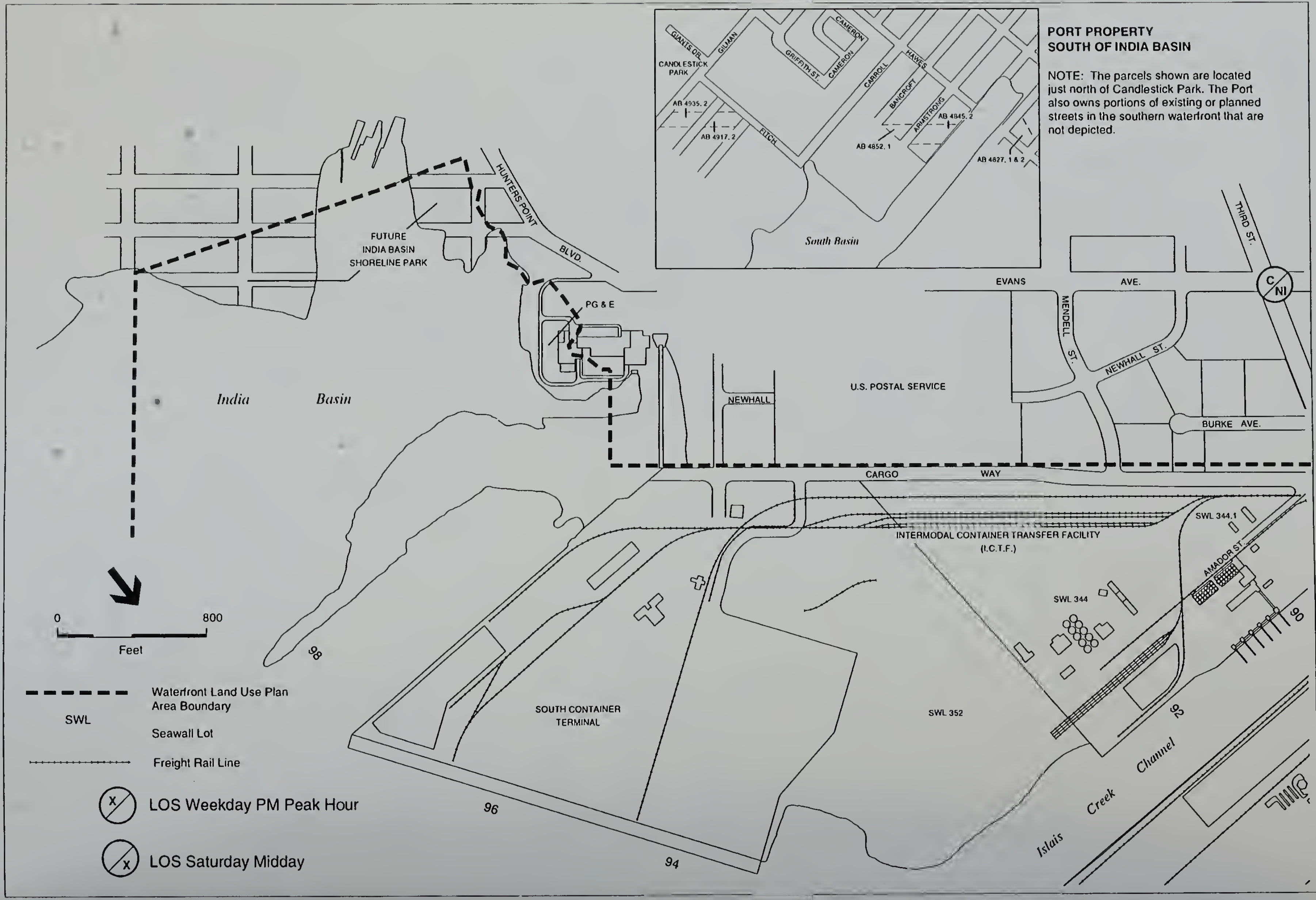


SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 27f

Existing Intersection Levels of Service
Southern Waterfront Subarea



SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

Figure 27g

Existing Intersection Levels of Service

Fisherman's Wharf. During the weekday P.M. peak hour, the analyzed intersections in the Fisherman's Wharf subarea operate at LOS D or better, except for the intersection at Bay Street and Columbus Avenue, which operates at LOS F. Saturday midday traffic levels at the analyzed intersections all operate at LOS D or better.

Northeast Waterfront. Along The Embarcadero in the Northeast Waterfront subarea, the analyzed intersections operate at LOS C or better during the weekday P.M. peak hour, except for Lombard Street at Battery Street and The Embarcadero, which operates at LOS F. Lombard Street is a minor approach (for traffic volume and control purposes), and is an unsignalized intersection with Battery Street and The Embarcadero. Lombard Street does have a stop sign controlling turning movements onto Battery Street and The Embarcadero, and the LOS F refers to delay on Lombard Street. Based on observations, The Embarcadero operates at an acceptable level of service at this intersection since The Embarcadero has no controls. The Saturday midday service levels for the analyzed intersections in the Northeast Waterfront subarea operate at LOS D or better, except for Lombard Street at Battery Street and The Embarcadero, which operates at LOS E.

Ferry Building. The three analyzed intersections in the Ferry Building subarea (The Embarcadero at Washington, Mission and Folsom Streets) all operate at LOS B or better during the P.M. peak hour. For the Saturday midday, the intersection of The Embarcadero and Washington operates at LOS B.

South Beach/China Basin. Five intersections in the South Beach/China Basin subarea were analyzed for traffic volumes and levels of service. During the P.M. peak hour, The Embarcadero at Harrison, Bryant and Brannan, along with the intersection of Third and King Streets, operate at LOS E or F. The Embarcadero and Harrison Street intersection is the only one of these intersections which is signalized; therefore, the LOS for the remaining intersections is for the minor street (Bryant, Brannan and King Streets which have traffic control by way of stop signs at these intersections). Based on field observations, The Embarcadero traffic operates at an acceptable level at Bryant and Brannan Streets. Fourth and King Streets operates at LOS C. For the Saturday midday, the intersection of The Embarcadero and Harrison was determined to be LOS B.

Southern Waterfront. All analyzed intersections in the Southern Waterfront subarea currently operate at LOS C or better during the P.M. peak hour. For the Saturday midday, the intersection of Third and Twenty-fifth Streets operates at LOS A and the intersection at Third and Cesar Chavez (Army) Streets operates at LOS C.

Parking Characteristics

An inventory of on- and off-street public parking spaces was conducted for the Project Area. On-street public parking spaces include metered and unmetered spaces. Off-street public parking includes marked spaces in parking lots or garages that are available to the general public.

The Project Area contains approximately 5,125 public parking spaces, including 1,545 on-street spaces and 3,580 off-street spaces. The Port operates approximately 950 on-street metered spaces located in the Project Area which are included in the on-street inventory. In addition to the 3,580 off-street public spaces, there are approximately 990 off-street reserved parking spaces operated by the Port or its tenants, the majority of which are located in the Ferry Building subarea.

Parking occupancy counts were conducted during the peak weekday period (10 A.M. to 11:30 A.M.) and the peak weekend period (1 P.M. to 3 P.M.) on February 9 and February 11, 1995, respectively. Generally, facilities north of China Basin operated at or near capacity on weekdays, while south of China Basin parking is available. Existing parking inventory and occupancy by subarea are shown in Table 10 and are discussed in the following paragraphs.

Fisherman's Wharf

The Fisherman's Wharf subarea contains approximately 1,575 public parking spaces, consisting of some 95 on-street and 1,480 off-street spaces. Most of the parking in the Fisherman's Wharf subarea is contained in lots and structures oriented for tourist uses. The largest single parking facility in the subarea (and the Project Area as well) is the Pier 39 Parking Garage, located on Powell Street between Beach and Jefferson Streets. This garage contains approximately 980 public parking spaces.

On- and off-street parking occupancy was observed to be between 90 percent and 95 percent (at capacity) for the Fisherman's Wharf subarea for the weekday and weekend periods, on- and off-street. There is some seasonal variation because of summer and the height of the tourist season, and winter wharf activity. Occupancy rates found in the survey taken on February 9 for Fisherman's Wharf and the Pier 39 Parking Garage were observed to be 70 percent and

TABLE 10: PARKING INVENTORY AND OCCUPANCY, EXISTING CONDITIONS (1995)

	Number of Spaces			Percent Occupancy			
				Weekday		Weekend	
Subarea	Total	On-St./a/	Off-St./b/	On-St.	Off-St.	On-St.	Off-St.
Fisherman's Wharf	1,575	95	1,480	90	90	90	95
Northeast Waterfront	1,500	290	1,210	90	90	65	10
Ferry Building	415	285	130	90	90	60	40
South Beach/China Basin	1,035	275	760	90	90	30	30
Southern Waterfront	600	600	N/D/c/	<10	N/D	<10	N/D
TOTAL	5,125						

/a/ On-St. = Publicly available, marked, on-street parking.
/b/ Off-St. = Publicly available, marked, off-street parking in lots and garages.
/c/ N/D = Off-street parking in these areas consists mostly of informal (unpaved and unmarked) parking lots. An accurate assessment of available spaces could not be determined. Maximum possible number of spaces calculated based on lot size.

SOURCE: Pittman & Hames Associates, July 1995, and San Francisco Planning Department, November 1995

50 percent, respectively. Occupancy rates were adjusted upwards to reflect peak summer conditions for analysis purposes.

Northeast Waterfront

Approximately 1,500 parking spaces are located in the Northeast Waterfront subarea and are available for public use. Parking is concentrated on the land side of The Embarcadero, and tends to be clustered in the northern portion of this subarea. The Francisco Bay Garage (located at 80 Francisco Street) is the largest parking facility in the Northeast Waterfront subarea with about 600 spaces. This garage is open only on weekdays.

Weekday parking occupancy in the Northeast Waterfront subarea is approximately 90 percent. Parking occupancy is substantially lower on the weekends except in the vicinity of the

Embarcadero Center. Weekend on-street parking is approximately 65 percent occupied, while off-street parking occupancy is about 10 percent.

Ferry Building

The Ferry Building subarea has approximately 415 public parking spaces, 285 on-street and 130 off-street spaces. These totals do not include another 665 spaces which are reserved for Port staff and tenants, or require parking permits. Most of these spaces, both public and reserved, are located at Piers 1, ½, and 3, and in the median of The Embarcadero. During the week, public parking in the Ferry Building subarea is 90 percent occupied. On weekends, there is an available parking supply. On-street parking was observed to be approximately 60 percent occupied on weekends, and off-street parking approximately 40 percent occupied.

South Beach/China Basin

Because of the different parking characteristics in the sections north and south of China Basin, the South Beach/China Basin subarea is divided into two sections to accurately describe the parking inventory. The northern section lies north of China Basin to Harrison Street. This section contains about 1,035 designated on- and off-street parking spaces, of which some 275 are on-street and the remaining 760 are off-street spaces. The majority of the off-street public parking is located in the South Beach Yacht harbor and a Port-owned surface parking lot on Seawall Lot 330 between Bryant and Brannan Streets. Most of the on-street parking is located along The Embarcadero between Bryant and Third Streets.

On- and off-street parking in the northern section of this subarea is almost entirely occupied on weekdays. On the weekends, occupancy decreases to approximately 30 percent for on-street and off-street spaces. The exception is off-street parking at Pier 40, which was 90 percent to 95 percent occupied on weekends.

The southern section of the South Beach/China Basin parking inventory area is south of China Basin to Pier 68. Public parking in this industrial section is difficult to inventory because most on-street parking is informal with no controls, and occurs along unmarked block faces and sidewalks. On-street parking is estimated to be 880 spaces, and is considered to be the maximum number of available spaces. Similarly, publicly available off-street parking could not be reliably inventoried because the distinction between formal off-street parking lots and vacant lots being used informally for parking could not be determined. Parking occupancy for the southern section of the South Beach/China Basin subarea could not be accurately determined, but was estimated to be generally below 10 percent weekdays and weekends.

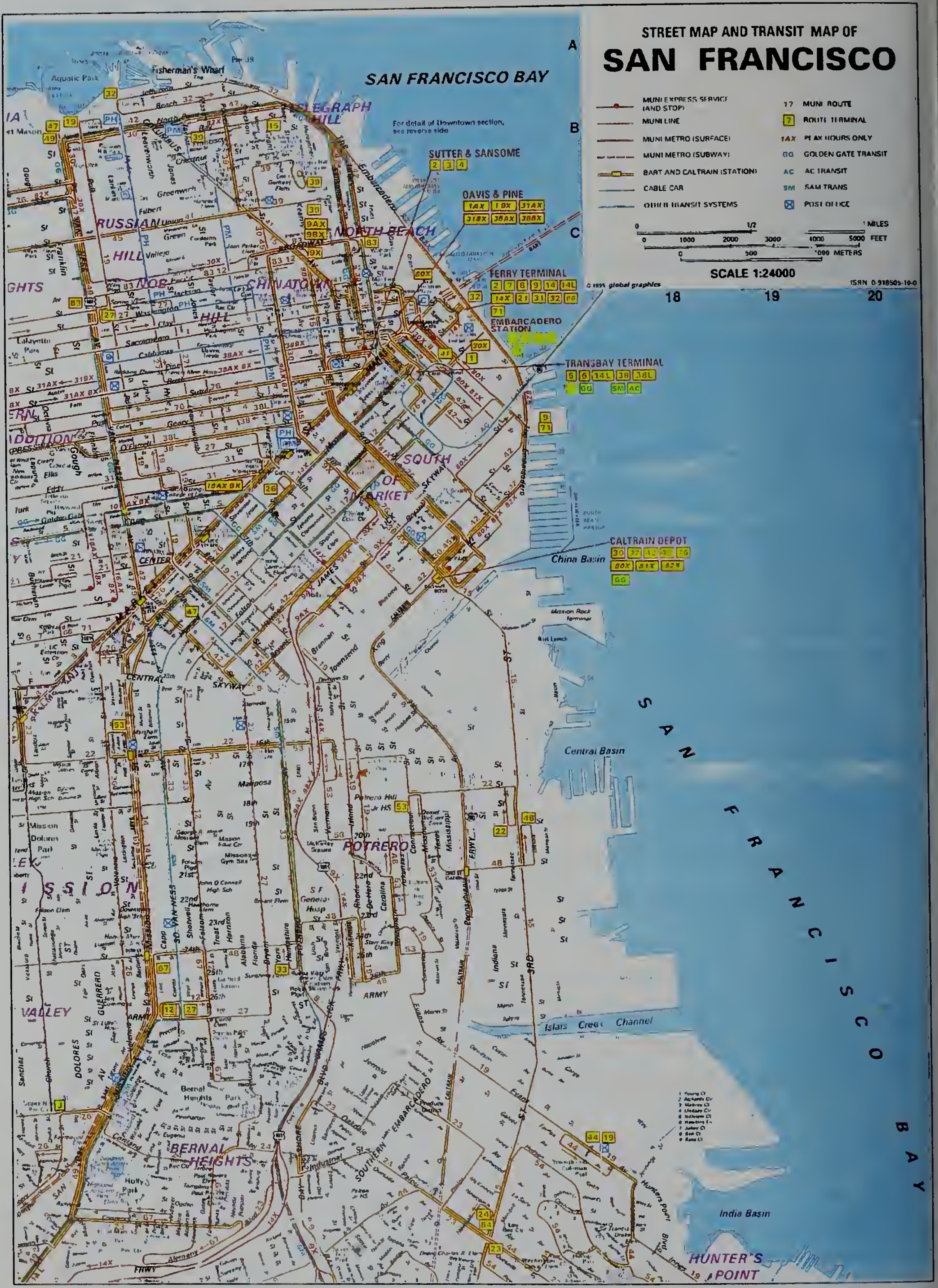
Southern Waterfront

Like the southern section of the South Beach/China Basin subarea, the Southern Waterfront subarea is highly industrial, containing the majority of the Port's shipping activities. Public parking is mostly informal and interspersed throughout the subarea. On-street parking is available primarily along Cargo Way. Off-street parking is unmarked and often unpaved. An estimated on-street parking inventory is considered to be a maximum of 600 spaces. No estimate of off-street parking or occupancy could be determined since the off-street parking in this area consists mostly of informal (unpaved and unmarked) parking on private property. Most employers in the Southern Waterfront accommodate employee parking needs on site without depending on public parking.

Public Transit Facilities and Service

The San Francisco Municipal Railway (Muni) is the local transit operator providing public transit service throughout the Project Area. Muni operates diesel coach, light rail, and electric coach service to various parts of the waterfront, as can be seen on Figure 28. Table 11, p. 191, presents the existing Muni service and ridership by screenline (corridor) within the City and County of San Francisco. Muni screenlines are hypothetical lines which, for planning purposes, are delineated to measure radial bus service carrying riders from downtown to other parts of the City and County. The screenlines divide the City and County into four geographic quadrants - Northeast, Northwest, Southeast, and Southwest. Further information on and discussion of Muni screenlines is found in Section V.D., Environmental Impacts, Transportation, beginning on p. 484. Since local transit travelers to and from the waterfront have origins and destination from all corridors of the City and County, Muni service and ridership information is presented for all four screenlines.

As shown in Table 11, the approximate number of P.M. peak hour Muni riders exceeds the number of seats provided, resulting in a load factor (ratio of riders to seats) of about 1.1. The Southwest screenline has the highest load factor of 1.2, followed by the Northwest screenline



SOURCE: Reproduced by permission of Global Graphics,
346 Vista Marazul, Oceanside, CA.. 92057
(619) 967-6400

Figu

Local Transit Se

TABLE 11: P.M. PEAK HOUR MUNI SEATING CAPACITY AND RIDERSHIP /a/

Screenline	Scheduled Seating Capacity /b/	Actual Seating Capacity /c/	Ridership	Load Factor /d/
Northeast	5,400	4,700	4,800	1.02
Northwest	6,700	5,900	6,300	1.07
Southeast	5,800	4,800	4,600	0.96
Southwest	8,500	7,400	8,700	1.18
Total	26,400	22,800	24,400	1.06 (average)

/a/ Based on Muni data from fiscal year 1992/93 as reported in the *Downtown Plan Monitoring Report*, City and County of San Francisco Planning Department, 1994.
/b/ Seating capacity presented in approximate number of scheduled seats.
/c/ Seating capacity presented in approximate number of seats provided.
/d/ Load factor is the ratio between ridership and scheduled seats provided.

SOURCE: San Francisco Planning Department, December 1995

with a load factor of 1.1. The Southeast and Northeast screenlines have load factors of 0.96 and 1.02, respectively. Table 11 also presents the scheduled capacity in terms of scheduled seats. There is a substantial difference between actual seats provided and scheduled service. The primary reasons for the differences are equipment breakdowns, inability to provide scheduled equipment, inadequate funds for maintenance and equipment purchases, and understaffing.[3]

Pedestrian Access

Fisherman's Wharf

Pedestrian activity in the Fisherman's Wharf subarea generally begins to increase at about 10 A.M. and does not show a decline in volume until about 9 P.M., particularly during the summer months and daylight savings time. Many tourists and other visitors walk along Jefferson Street, visit the retail shops, restaurants, and recreational facilities, and walk to board the passenger ferries in the vicinity of Pier 43. Street performers often attract large crowds which slow pedestrian movement along the sidewalks.

Pier 39 also attracts many pedestrians. Some visitors arriving by car and parking in the Pier 39 garage cross The Embarcadero to Pier 39 and other waterfront activities. Other visitors parking in the Pier 39 garage use the pedestrian overpass connecting the garage with the waterfront. The intersections of Jefferson with Powell, Mason, Taylor, Jones, and Leavenworth Streets all have substantial numbers of pedestrians crossing the streets between various shops, restaurants and other activities. The intersection of Jefferson and Powell often has large numbers of pedestrians queuing on street corners waiting for the pedestrian crossing signal. Jaywalking is very common, resulting in potential safety hazards to both jaywalkers and motorists. The heaviest pedestrian flow occurs along The Embarcadero between Taylor Street and Pier 33, Jefferson Street between The Embarcadero and Hyde Street, Beach Street between Larkin and Leavenworth Streets, Taylor Street between the cable car turnaround at Bay Street and The Embarcadero, and Hyde Street Between Beach and Jefferson Streets. The sidewalks along these pedestrian routes are generally not wide enough for free-flowing pedestrian movement. In addition, there are obstructions such as street artists, performers, and vendors which prevent smooth pedestrian flow. As visitors stop to observe the sidewalk activities, the pedestrian flow spills out into the streets.

Northeast Waterfront

In the Northeast Waterfront, pedestrian activity is not as heavy as in the Fisherman's Wharf subarea, but many people walk and jog along this section of the Embarcadero Promenade (between the Ferry Building and Fisherman's Wharf). There are no signalized intersections on The Embarcadero between Sansome and Broadway, making pedestrian crossing The Embarcadero in this vicinity potentially unsafe during peak traffic. Low volumes of pedestrians were observed crossing The Embarcadero in this subarea.

Ferry Building

Pedestrian activity in the Ferry Building subarea is very heavy during morning and afternoon peak periods as commuters travel to and from the ferries. The signalized pedestrian crossing at The Embarcadero to Market Street directly in front of the Ferry Building is heavily used by pedestrians connecting to the ferries. Often large crowds cross The Embarcadero just before and after a ferry has arrived. People also use this crossing to access the Embarcadero Promenade, particularly on weekdays at lunch time. There is one unsignalized crosswalk on The Embarcadero between the Ferry Building and Washington Street accessing Pier 1/2. This crossing is heavily used before and after a commuter ferry has arrived. Motorists often do not yield right of way to pedestrians at this unsignalized crossing, which poses unsafe conditions.

South Beach/China Basin

In this subarea, pedestrian activity is lighter than in the three more northerly subareas. Most pedestrian crossings on The Embarcadero in this subarea are signalized. There is some increased activity in the South Beach/China Basin subarea on weekdays during lunch time along the promenade in South Beach and around the take-out eating establishments.

Southern Waterfront

The Southern Waterfront subarea has little pedestrian activity compared to the other subareas north. Most pedestrian crossings found in this subarea are signalized. Most pedestrian activity was observed during lunch time.

Bicycle Access

The level of bicycle activity varies widely along the waterfront as do the type of facilities available. There is a growing level of commuter and recreational bicycling in the Fisherman's Wharf, Northeast Waterfront and Ferry Building subareas with the increased density of attractors such as large employment centers and retail/recreational destinations. Bicyclists share the roadways in these subareas with other vehicles, mostly without designated or signed bike paths.

In the South Beach/China Basin and Southern Waterfront subareas, there is some bicycle commuting along Third Street despite the lack of bicycle facilities such as designated routes. Beginning at King and Third Streets and continuing up The Embarcadero to Folsom Street on The Embarcadero, there are on-street designated bicycle lanes. Less heavily used parallel streets such as Tennessee and Indiana are popular alternative routes to the busy Third Street. These routes also provide access to the CalTrain Station at 22nd Street.

Goods and Services Movement

Within the transportation study area, truck access to the waterfront is along The Embarcadero and Third Street with I-80, I-280 and U.S. 101 connecting with the local streets, as shown on Figure 25, p. 168. Third Street has through truck restrictions south of Jerrold Avenue in the South Bayshore neighborhood, requiring most trucks to use Cesar Chavez (Army) Street for freeway access. In addition, Mariposa, Sixteenth, and Illinois Streets along with Cargo Way provide access to the waterfront and experience heavy truck traffic. Local cross streets north and west of China Basin such as Berry, Third, and Bryant Streets must be used to access I-80. Access to I-280 from the northern portion of South Beach/China Basin is by way of Berry to Third to Brannan to the Sixth Street on-ramp. South of China Basin, including the container shipping terminals at Piers 80-96, trucks normally use Cesar Chavez Street from U.S. 101 and I-280. Improvements are underway on Cesar Chavez Street to better accommodate truck movements. The local street system does not present any substantial congestion problems for goods and service movements; however, congestion on U.S. 101 and I-80 are constraints, particularly for truck movements to and from the East Bay.

Today, the Port's cargo facilities are concentrated in the Southern Waterfront, as shown in Figure 25, p. 168. Here the cargo facilities rely almost completely on truck access to and from Illinois and Third Streets, Cargo Way, I-280, and U.S. Highway 101. Access to the highway system (U.S. Highway 101, I-280 and I-80) is fundamental to the Port's competitiveness in the cargo shipping industry. Container shipping facilities are concentrated at Piers 80 and 94-96, although the North Container Terminal, located at Pier 80 north of Islais Creek, is currently closed. South Container Terminal, located at Piers 94 - 96 between Islais Creek and India Basin, is in operation.

The Southern Pacific (SP) Transportation Company sold its rail trackage to the CalTrain JPB, which operates the Peninsula commuter trains with an agreement that SP can provide exclusive rail freight service to San Francisco. Currently, the Port generates an average of one rail freight operation per week along the rail trackage shown in Figure 25, p. 168. There are several existing constraints in the rail freight service to the Port of San Francisco. Operations are constrained because there is no rail yard within San Francisco. All San Francisco cargo is processed through the South San Francisco yard to the Oakland or Warm Springs (Fremont) yards in the East Bay, which is an operation that takes approximately two days, adding time and cost to freight movements. In addition, the heights of two tunnels located in the southeast section of

San Francisco do not allow double-stacked container operations, which limits potential freight capacity of trains serving the Port. Another constraint is that freight operations must be conducted during the midday and evening hours to avoid conflict with the operation of passenger trains (CalTrain) on the same tracks.

NOTES - Transportation

1 Reported by Wilbur Smith Associates, based on telephone conversation with Dean Leonard, BART staff, November 1995.

2 City and County of San Francisco, Planning Department, *Downtown Plan Monitoring Report*, 1994, p. 35, Table 10.

3 City and County of San Francisco, Planning Department, *Downtown Plan Monitoring Report*, 1994, pp. 35-36, Table 10.

E. NOISE

INTRODUCTION

Noise levels are measured in decibels (dB).[1] Each three dB increase or decrease in sound pressure level represents a doubling or halving, respectively, of sound intensity. Human perception of sound "loudness" does not relate directly to sound pressure level and varies among individuals. In general, a difference of three dB is perceptible and a difference of ten dB is perceived as a doubling of loudness. Some common indoor and outdoor noise levels and typical public reactions are shown in Figure 29.

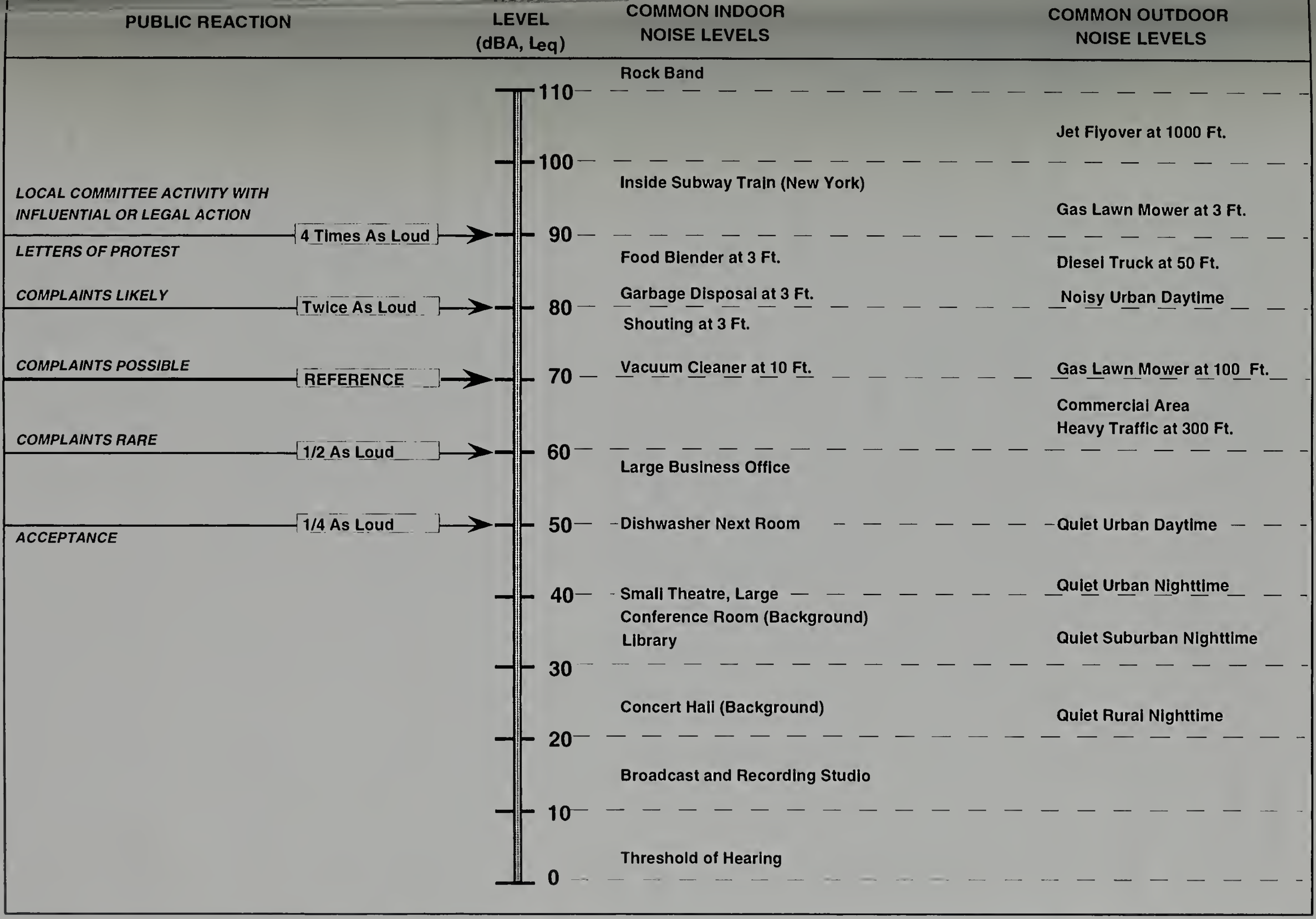
Environmental noise levels typically fluctuate over time, and different types of noise descriptors are used to account for this variability. Descriptors representing time-averaged noise levels include L_{eq}, L_{dn}, and CNEL.[2,3,4] L_{eq} represents the actual time-averaged noise level, while L_{dn} and CNEL are 24-hour noise descriptors calculated from L_{eq}. The calculation of L_{dn} and CNEL accounts for the greater sensitivity of most people to nighttime noise. L_{dn} and CNEL are commonly used in establishing noise exposure guidelines for specific land uses.

EXISTING NOISE ENVIRONMENT

The area of analysis for potential noise impacts includes the Project Area, areas that could be affected by Alternative-generated traffic noise, and uses near the Project Area in which persons could be disturbed by noise. The existing noise environment in this area is influenced primarily by surface-vehicle traffic, principally on The Embarcadero (which goes through the Fisherman's Wharf, Northeast Waterfront, Ferry Building, and South Beach/China Basin subareas) and Third Street (which is near portions of the South Beach/China Basin and Southern Waterfront subareas). Secondary noise sources include marine traffic arriving at and departing from the Port, industrial operations and building mechanical equipment.

Vehicle Traffic

The Embarcadero, traversing the Project Area on a generally north-to-south alignment, is the largest source of noise from motor vehicles; at 50 feet from the centerline, peak-hour noise levels along The Embarcadero are about 74 dBA, L_{eq}. Other principal roads in the vicinity of the Waterfront are Third Street, a north-south arterial in the South Beach/China Basin and Southern Waterfront subareas, and Interstate 80 (I-80)/Bay Bridge, which is elevated above the Project



SOURCE: Caltrans Transportation Laboratory Noise Manual, 1982; and Modification by Environmental Science Associates, Inc.

Figure 29

Common Indoor and Outdoor Noise Levels

Area between Harrison and Bryant Streets (near Piers 24 and 26). The measured peak-hour noise level is about 72 dBA, L_{eq} on Third Street and about 76 dBA, L_{eq} on The Embarcadero at Bryant Street, adjacent to the Bay Bridge.

Other Noise Sources

Non-motor vehicle noise sources in the Project Area include marine ship activity and industrial activity. Marine vessel activity in the Fisherman's Wharf subarea consists primarily of recreational boats, fishing boats and excursion boats, the operation of which results primarily in intermittent engine noise, horn and whistle noise, and early morning truck noise from fish handling activity. Cruise ship activity in the Northeast Waterfront subarea also results in infrequent engine, horn and whistle noise (there are roughly 40 vessel calls per year). Cargo shipping operations in the Northeast Waterfront subarea occur primarily in enclosed pier sheds and are not substantial noise sources relative to vehicle traffic on The Embarcadero. The operation of commuter ferries at Pier ½ in the Ferry Building subarea results in frequent engine noise during commute hours, but many of the ferry operations are shielded from noise-sensitive uses by the Ferry Building. Cargo handling, maritime support services, ship repair, operation of forklifts, conveying equipment and truck operations are substantial noise sources in the South Beach/ China Basin and Southern Waterfront subareas.

NOISE-SENSITIVE USES

Certain types of land uses are considered to be more sensitive to ambient noise levels than others, due to the amount of noise exposure (in terms of both exposure time and intensity) and the types of activities typically involved with these land uses. Schools, libraries, churches, hospitals, convalescent and nursing homes, auditoriums, parks, and outdoor recreation areas are generally more sensitive to noise than are commercial and industrial land uses. Residences may also be considered noise-sensitive uses because residents may be disturbed by noise. In order to identify acceptable noise levels for various types of land uses, cities and counties in California are required to adopt land use noise compatibility guidelines.

Land uses within the vicinity of the San Francisco waterfront include residential, commercial, and industrial development. Various noise - sensitive land uses, facilities, and activities are exposed to noise mainly from surface traffic. Selected noise - sensitive land uses in and near the Project Area and their monitored noise levels are listed in Table 12; the monitoring locations are shown in Figure 30, p. 200.

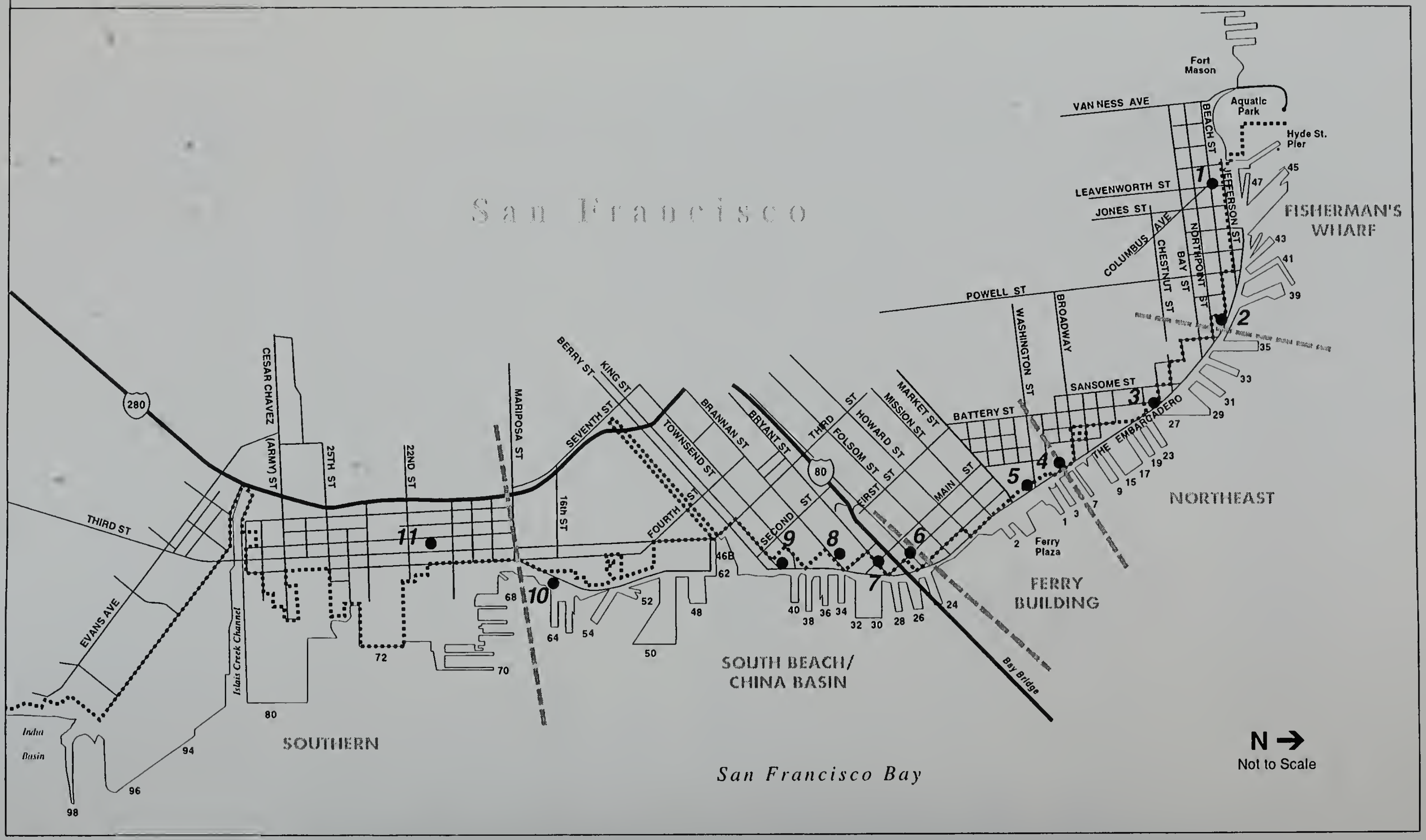
TABLE 12: SELECTED SENSITIVE NOISE RECEPTORS IN AND NEAR THE PROJECT AREA AND THEIR EXISTING MEASURED NOISE LEVELS

Receptor Number	Name	Nearest Subarea	Land Use	Noise Level dBA, Leq /a,b/	 dBA, Ldn/c/
1	Joseph Conrad Park	Fisherman's Wharf	Recreation	66	72
2	Academy of Art College	Fisherman's Wharf	School	74	NM
3	Foot of Telegraph Hill	Northeast	Residential	71	NM
4	Golden Gateway/ Pier 7/d/	Northeast	Residential/ Recreation	68	72
5	Justin Herman Plaza	Ferry Building	Park	62	65
6	Marin Day School	South Beach	School/Daycare	72	74
7	Portside	South Beach	Residences	74	76
8	Bayside Village	South Beach	Residences	74	72
9	Delancey Street/ Steamboat Point/d/	South Beach	Residences	74	NM
10	Agua Vista Park/d/	South Beach	Park	63	NM
11	Tennessee Street	Southern	Residences	60	61

NM = No measurement taken

/a/ Noise level monitored during the weekday P.M. peak traffic hour.
/b/ Leq is the equivalent steady-state sound level.
/c/ Ldn is the day-night average sound level (24-hour period, with a greater weighting for nighttime noise).
/d/ Location is within the Project Area.

SOURCE: Environmental Science Associates, 1995; City and County of San Francisco, 1995



.... Waterfront Land Use Plan Area Boundary
(Plan Area boundary and subarea boundaries are approximate.)

NOTE: The Port also owns property south of India Basin, shown on the subarea map of the Southern Waterfront (Figure 6b).

▬ ▬ ▬ Subarea Boundary

11 ● Noise Monitoring Location

SOURCE: Environmental Science Associates

San Francisco Waterfront Land Use Plan EIR ■

Figure 30

Selected Noise Monitoring Locations Within the Project Area and Subareas

Noise-sensitive uses within the Fisherman's Wharf subarea include Aquatic Park, a small chapel at Pier 49, and several open space areas. Noise-sensitive uses adjacent to the Fisherman's Wharf subarea include (among others) Joseph Conrad Park and adjacent residences located approximately 400 feet south of the Fisherman's Wharf subarea at the terminus of Columbus Avenue.

Pier 7 is a public access open space and is the only noise-sensitive use located in the Northeast Waterfront subarea. Noise-sensitive uses adjacent to the Northeast Waterfront subarea include (among others) residences at the foot of Telegraph Hill and the Golden Gateway Complex, approximately 200 feet west of the subarea boundary.

Ferry Plaza, a major open space on the Bay side of the Ferry Building, is the only noise-sensitive use within the Ferry Building subarea. Rincon Park is a planned open space in the subarea. Noise-sensitive uses adjacent to the Ferry Building subarea include Justin Herman Plaza, approximately 100 feet west of the subarea boundary.

The Delancey Street and Steamboat Point housing developments are noise-sensitive uses located within the South Beach/China Basin subarea. Phase one of South Beach Park, which opened in early 1996 is at Seawall Lot 334, and phase two (planned but currently unfunded) is at Seawall Lots 335 and 336. Agua Vista Park, a public access open space at Pier 64½, is also a noise-sensitive use. Noise-sensitive uses adjacent to the South Beach/China Basin subarea include Marin Day School and the Bayside Village and Portside residential developments.

Two small open spaces (Warm Water Cove and open space along Islais Creek) are the only noise-sensitive uses within the Southern Waterfront subarea. Noise-sensitive uses adjacent to the Southern Waterfront subarea include residences on Tennessee Street, Hunters Point Boulevard and Hawes Street, approximately 400 feet west of the subarea boundary. A single residence is located on the northeast corner of Third Street at Twentieth Street, about 200 feet west of the subarea boundary.

NOISE REGULATIONS, PLANS, AND POLICIES

California State Noise Standards

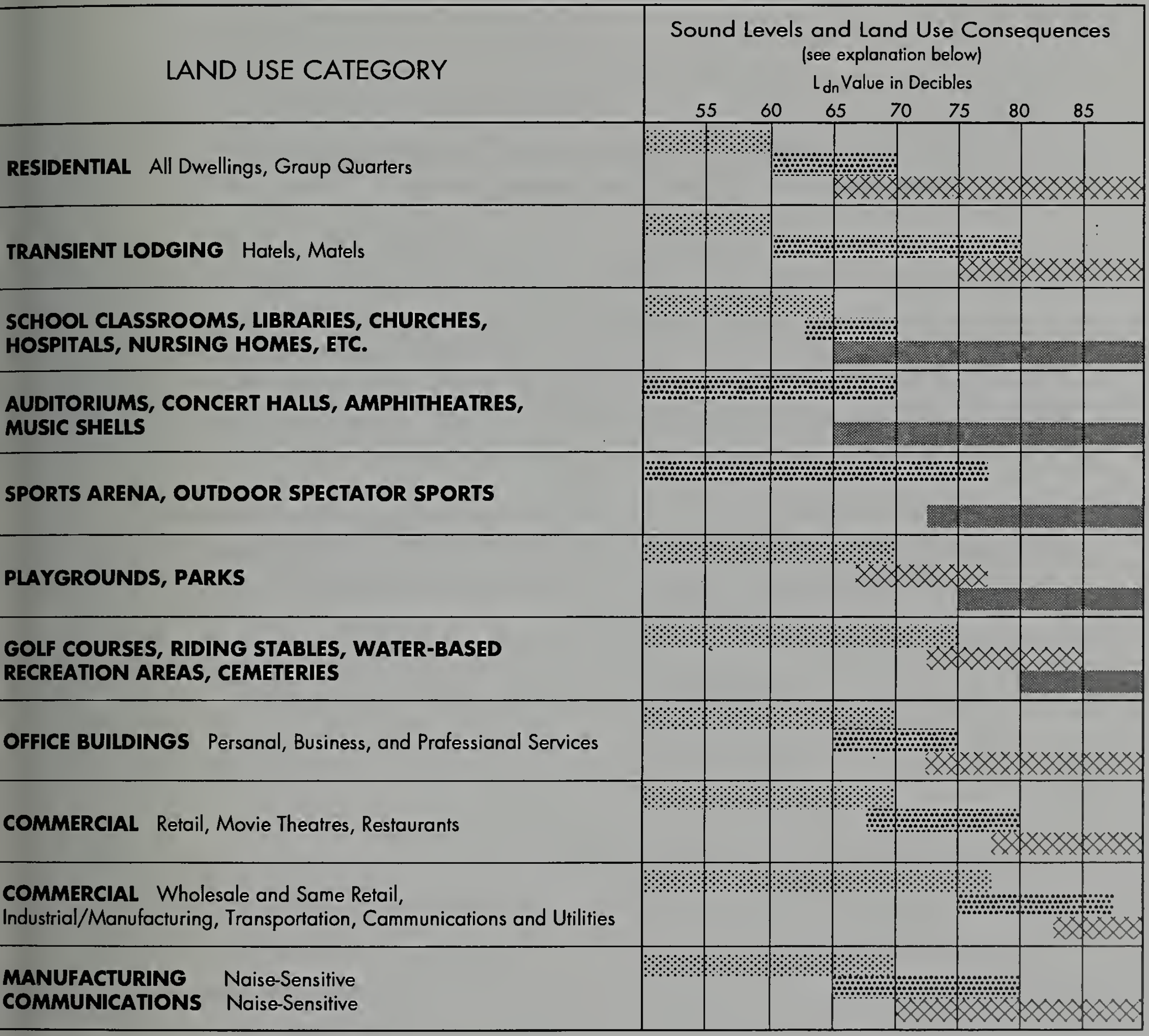
Figure 31 sets forth the recommended noise levels compatible with different types of land use, based on guidelines of the Office of Noise Control, State Department of Health Services and published in the Environmental Protection Element of the San Francisco Master Plan.

Title 24 , Part 2 of the California Code of Regulations contains requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings intended to limit the extent of noise transmitted into habitable spaces. These requirements are collectively known as the California Noise Insulation Standards. For limiting noise transmitted from exterior sources, the Standards set forth an interior standard of 45 CNEL in any habitable room with all doors and windows closed, and require an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard (where such units are proposed in areas subject to transportation noise levels greater than 60 CNEL). Title 24 standards are enforced through the building permit application process in San Francisco, as in most jurisdictions.

Noise Ordinances

San Francisco Noise Ordinance

During construction, powered construction equipment other than impact tools would be required to comply with the San Francisco Noise Ordinance (Article 20 of the City Police Code, Section 2907b), which limits construction noise to 80 dBA at 100 feet. The Noise Ordinance (Section 2908) also prohibits construction work at night from 8:00 p.m. until 7:00 a.m., if noise from such work would exceed the ambient noise level by five dB at the property line, unless a special permit is authorized by the San Francisco Department of Public Works.



░ Satisfactory, with no special noise insulation requirements.

▒ New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features in the design.

▩ New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

▓ New construction or development should generally not be undertaken.

Environmental Science Associates, based on San Francisco General (Master) Plan, Environmental Protection Element.

Figure 31

Land Use Compatibility Chart for Community Noise

NOTES - Noise

1 A decibel (dB) is a logarithmic unit of sound energy intensity. Sound waves, traveling outward from a source, exert a sound pressure level (commonly called "sound level") measured in decibels. A dBA is a decibel corrected for the variation in frequency response of the typical human ear at commonly encountered noise levels.

2 L_{eq} is the equivalent steady-state sound level that, in a stated period, would contain the same acoustical energy as the actual time-varying sound level measured during that period.

3 L_{dn}, the day-night average sound level, is based on human reaction to cumulative noise exposure over a 24-hour period, and takes into account the greater annoyance of nighttime noise. Noise occurring between 10:00 p.m. and 7:00 a.m. is weighted 10 dBA higher than noise occurring during the daytime.

4 CNEL, the community noise equivalent level, is similar to L_{dn}, but incorporates an additional five-decibel penalty (beyond the L_{dn}) for noise occurring between 7:00 p.m. and 10:00 p.m. CNEL and L_{dn} are generally considered to be equivalent for most purposes.

F. AIR QUALITY

CLIMATE AND METEOROLOGY

The primary factors determining air quality are the locations of air pollutant sources and the amounts of pollutants emitted. Meteorological and topographical conditions, however, are also important. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The topographical and atmospheric characteristics of San Francisco tend to promote dispersal of air pollutants generated in the Project Area to locations downwind. The temperature profile in the atmosphere and the amount of humidity and sunlight also affect the resulting concentrations of air pollutants defining the air quality on a given day.

The San Francisco Bay Area climate is Mediterranean in character, with mild, rainy winter weather from November through March, and warm, dry weather from June through October. There is a relatively high percentage of sunshine away from the immediate coast, particularly in summer. The movements of marine air, which in large part determine the temperature, humidity, wind, and precipitation throughout the year, depend upon the location and strength of the dominant Pacific high-pressure system and the coastal temperature gradient.

In summer, the Pacific high-pressure system typically remains near the coast of California, diverting storms to the north through the northern states and Canada. Subsidence of warm air, associated with the Pacific high, creates frequent summer atmospheric temperature inversions and stagnant atmospheric conditions. Subsidence inversions may be several hundred to several thousand feet deep, effectively trapping pollutants in a small volume of air near the ground. Except for late afternoon onshore winds caused by differential heating between the cool ocean and warm land mass, summer wind speeds generally are low and ventilation is relatively poor. The maximum monthly mean temperature during the summer is about 65°F in the Project Area.

In winter, the Pacific high-pressure system moves southward, allowing ocean-formed storms to move through the region. Stagnant atmospheric conditions can exist for several days between storms. The frequent storms and infrequent periods of sustained sunny weather are not conducive to smog formation. Radiational cooling during the evening, however, sometimes creates thin inversions and concentrates air pollutant emissions near the ground. The maximum monthly mean temperature during the winter in the Project Area is about 49°F.

AIR QUALITY REGULATIONS, PLANS AND POLICIES

Regulation of air quality is achieved through both federal and State ambient air quality standards and emissions limits for individual sources of air pollutants. The current federal and State Air Quality Standards are presented in Table 13.

Federal

The 1977 Federal Clean Air Act required the U.S. Environmental Protection Agency (EPA) to identify National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. NAAQS have been established for the six "criteria" air pollutants, so-called because EPA publishes criteria documents to justify the choice of standards. NAAQS have been established for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), inhalable particulate matter (PM_{10}), and lead (Pb).

Pursuant to the 1990 Federal Clean Air Act Amendments, the EPA has classified Air Basins (or portions thereof) as either "attainment" or "non-attainment" for each criteria air pollutant, based on whether or not the NAAQS had been achieved. The Project Area lies within the San Francisco Bay Area Air Basin (Air Basin) which the EPA has recently re-classified as a maintenance area for O_3. The urbanized areas of the Air Basin are classified as non-attainment for CO, although the Bay Area Air Quality Management District (BAAQMD) has recently applied for a change of classification to "maintenance" based upon recent improvements in basin-wide CO concentrations.[1] The Air Basin is classified as an attainment area for SO_2 and Pb and is unclassified for PM_{10} and NO_2.[2] Unclassified is defined by the Federal Clean Air Act Amendments as any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

State

The California Air Resources Board (ARB) manages air quality, regulates mobile emissions sources, and oversees the activities of county Air Pollution Control Districts (APCDs) and regional Air Quality Management Districts (AQMDs). The ARB regulates local air quality indirectly by establishing State ambient air quality standards and vehicle emission standards, by conducting research activities, and through its planning and coordinating activities.

TABLE 13: STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	SAAQS/a/	NAAQS/b/
Ozone	1 hour	0.09 ppm/c/	0.12 ppm
Carbon Monoxide	1 hour	20 ppm	35 ppm
	8 hour	9.0 ppm	9 ppm
Nitrogen Dioxide	1 hour	0.25 ppm	NA
	Annual	NA	0.053 ppm
Sulfur Dioxide	1 hour	0.25 ppm	NA
	3 hour	NA	0.5 ppm
	24 hour	0.04 ppm	0.14 ppm
	Annual	NA	0.03 ppm
Suspended Particulate Matter	24 hour	50 µg/m^3/c/	150 µg/m^3
	Annual	30 µg/m^3	50 µg/m^3
Sulfates	24 hour	25 µg/m^3	NA
Lead	30 day	1.5 µg/m^3	NA
	Calendar Quarter	NA	1.5 µg/m^3
Hydrogen Sulfide	1 hour	0.03 ppm	NA
Vinyl Chloride	24 hour	0.010 ppm	NA

/a/ SAAQS (i.e., California standards) for ozone, carbon monoxide, sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter are values that are not to be exceeded. All other California standards shown are values not to be equaled or exceeded.

/b/ NAAQS (i.e., national standards), other than ozone and those based on annual averages, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

/c/ ppm = parts per million by volume; µg/m^3 = micrograms per cubic meter.

NA: Not Applicable.

SOURCE: California Air Resources Board, *Area Designations for State and National Ambient Air Quality Standards,* September 1993.

California has adopted some ambient standards that are more stringent than the federal standards for the criteria air pollutants. Under the California Clean Air Act, patterned after the Federal Clean Air Act, areas have been designated as attainment or non-attainment with respect to the State ambient air quality standards. The Air Basin is a non-attainment area for O_3 and PM_{10} with respect to the State standards.[2] The Air Basin is designated as an attainment area for State CO, NO_2, SO_2 and Pb standards.

Local

The Project Area is in the City and County of San Francisco, under the jurisdiction of the BAAQMD. The BAAQMD is the agency empowered to regulate air pollutant emissions in the Air Basin. The BAAQMD is responsible for implementing emissions standards and other requirements of federal and State laws; it controls stationary source emissions by issuing air quality permits that require the implementation of Best Available Control Technology (BACT) if specified trigger levels are exceeded.

As required by the California Clean Air Act, BAAQMD has published its *Bay Area '94 Clean Air Plan (CAP)*. The goal of the *'94 CAP* is to improve air quality through the 1990s through tighter industry controls, cleaner cars and trucks, cleaner fuels, and increased commute alternatives. The *'94 CAP* encourages cities and counties to adopt measures in support of this goal. Identified measures include developing rules to reduce vehicle trips to and from major residential developments, shopping centers, and other indirect sources; encouraging cities and counties to plan for high-density development; and clustering development with mixed uses in the vicinity of mass transit stations. One control measure within the *'94 CAP* that would apply to the Waterfront Land Use Plan (WLUP) is Transportation Control Measure (TCM) 7, which directs local agencies to improve ferry service.

To operate most new or modified stationary sources in the Bay Area, one must first apply for an Authority to Construct with the BAAQMD in order to receive a Permit to Operate. If certain threshold emissions limits would be exceeded, then an applicant must install BACT on the new or modified source and/or provide emission offsets. Emission offsets can take the form of contemporaneous changes at a plant to reduce emissions from an existing source or they can be purchased from the BAAQMD emissions credit bank program.

Marine Emissions

Currently, air emissions from maritime engine sources are not regulated by the U.S. EPA or the ARB.[3] However, EPA has proposed a new regulation that would restrict the emissions from new marine engines. The regulation would not be retroactive and would not require retrofitting of existing marine engines. ARB is currently developing a similar regulation but expects that the EPA regulation will be in place before the ARB regulation is proposed.

The BAAQMD regulates emissions of organic compounds from ship activities with the Bay Area Air Basin. BAAQMD's Regulation 8, Rule 43 limits the content of volatile organic compounds (VOC) in marine vessel surface coatings unless air pollution abatement equipment is in place. BAAQMD's Regulation 8, Rule 44 limits the VOC content of organic liquids loaded at marine terminals unless air pollution abatement equipment is in place. Similarly, BAAQMD's Regulation 8, Rule 46 limits the VOC content of organic liquids transferred from one marine vessel to another.

EXISTING AIR QUALITY

The BAAQMD operates a regional air quality monitoring network that provides information on average concentrations of those pollutants for which State or federal agencies have established ambient air quality standards. Table 14 presents a five-year summary of monitoring data for these criteria pollutants. The data are collected at 10 Arkansas Street in San Francisco, which varies in distance from approximately 1,600 feet to three miles from portions of the Project Area.

Ozone (O_3)

The State O_3 standard is regularly violated in parts of the Bay Area and, therefore, the Air Basin is non-attainment for O_3. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving HC and NO_x. Significant O_3 production generally requires about three hours in a stable atmosphere with strong sunlight. Ozone is a regional air pollutant because its precursors are transported and diffused by wind concurrently with O_3 production. Motor vehicles are the major source of O_3 precursors in the Bay Area. Ozone causes eye and respiratory irritation, reduces resistance to lung infection, and may aggravate pulmonary conditions in persons with lung disease. Ozone also is damaging to vegetation and untreated rubber. However, as shown in Table 14, the State O_3 standard has not been exceeded in San Francisco over the past five years.

TABLE 14: SAN FRANCISCO AIR POLLUTANT SUMMARY, 1990-1994

		Monitoring Data by Year/a/				
Pollutant	Std./b/	1990	1991	1992	1993	1994
Ozone (O_3)						
Highest 1-hr. average, ppm/c/	0.09	0.06	0.05	0.08	0.08	0.06
Number of violations		0	0	0	0	0
Carbon Monoxide (CO)						
Highest 1-hr. average, ppm	20.0	8.0	9.0	8.0	7.0	N/A
Number of violations		0	0	0	0	N/A
Highest 8-hr. average, ppm	9.1	5.6	6.5	6.4	5.1	4.4
Number of violations		0	0	0	0	0
Nitrogen Dioxide (NO_2)						
Highest 1-hr. average, ppm	0.25	0.11	0.10	0.09	0.08	0.09
Number of violations		0	0	0	0	0
Sulfur Dioxide (SO_2)						
Highest 1-hr. average, ppm	0.25	0.03	0.04	0.04	0.04	N/A
Number of violations		0	0	0	0	N/A
Particulate Matter (PM_{10})						
Highest 24 hr. average µg/m^3	50	165	109	81	69	N/A
Number of violations/d/		12	15	9	5	6
Annual geometric mean, µg/m^3	30	27.8	29.7	27.6	25.1	24.7
Lead (Pb)						
Highest monthly average, µg/m^3	1.5	0.06	0.05	0.02	0.02	N/A
Number of violations		0	0	0	0	N/A

/a/ All data are from the monitoring station located at 10 Arkansas Street in San Francisco, approximately 0.3 to 3.0 miles west of the Project Area.
/b/ State standard, not to be exceeded, except for Pb standard, not to be equaled or exceeded.
/c/ ppm = parts per million; µg/m^3 = micrograms per cubic meter.
/d/ Samples typically taken every six days.

Note: Underlined values are in excess of applicable standard. N/A = Not Available.

SOURCE: California Air Resources Board, *Air Quality Data Summaries*, 1990-1993; Bay Area Air Quality Management District, *Air Currents for 1994*, April 1995.

Carbon Monoxide (CO)

Carbon monoxide is an odorless, invisible gas usually formed as the result of incomplete combustion of organic substances. About 70 percent of the CO emitted in the Bay Area comes from motor vehicles.[4] Ambient CO concentrations normally correspond closely to the spatial and temporal distributions of vehicular traffic. Carbon monoxide concentrations also are influenced by wind speed and atmospheric mixing. Under inversion conditions, CO concentrations may be distributed more uniformly over an area out to some distance from vehicular sources. High levels of CO can impair the transport of oxygen in the bloodstream, thereby aggravating cardiovascular disease and causing fatigue, headaches, and dizziness. The State CO standard has not been violated in San Francisco over the past five years. In 1992, oxygenated gasoline was introduced into the Bay Area over the winter months to reduce CO emissions from motor vehicles during the season when violations of CO standards typically occur. The BAAQMD expects CO emissions to decrease through 2010.[4]

Respirable Particulate Matter (PM_{10})

Particulate matter consists of particulates 10 microns or less in diameter, which can be inhaled and cause adverse health effects. Particulates in the atmosphere result from many kinds of dust- and fume-producing industrial and agricultural operations, combustion, and atmospheric photochemical reactions. Demolition, construction, and vehicular traffic are major sources of particulates in urban areas. Natural sources of particulates include wind erosion from exposed surfaces. Particulate concentrations near residential sources generally are higher during the winter, when more fireplaces are in use and meteorological conditions prevent the dispersion of directly emitted contaminants. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility. The State PM_{10} standard is occasionally violated in San Francisco based on measured concentrations. The BAAQMD predicts that particulate emissions will increase steadily through year 2010, primarily due to entrained road dust generated by projected increases in vehicle miles traveled.[4]

Nitrogen Dioxide (NO_2)

Nitrogen dioxide is the "whiskey brown" colored gas readily visible during periods of heavy air pollution. The major sources of NO_2 are vehicular, residential, and industrial combustion. The standards for NO_2 are being met in the Bay Area, and the BAAQMD does not expect these standards to be exceeded in the future. Nitrogen oxide emissions are expected to decrease slightly until 1996, and then increase very slightly until the year 2010.[4]

Sulfur Dioxide (SO_2)

The major source of SO_2 in the Air Basin is combustion of high-sulfur fuels. Ambient standards for SO_2 are being met throughout the Bay Area, and the BAAQMD does not expect these standards to be exceeded in the future. The BAAQMD expects SO_2 emissions to increase slightly until the year 2010.

Lead (Pb)

Gasoline-powered automobile engines used to be the major source of airborne Pb in urban areas, but are no longer the major source since leaded fuels have been phased out of the gasoline market. Pb can cause hematological (blood-related) effects, such as anemia (iron-deficient blood) and inhibition of enzymes involved in blood synthesis. Ambient levels in the Bay Area are well below the ambient standard and are expected to continue to decline.

EXISTING SOURCES OF AIR POLLUTION

Air pollution sources common to all subareas of the Project Area include stationary sources such as combustion of natural gas for heating and mobile sources such as motor vehicle traffic and marine vessels. Major stationary sources of air pollution are inventoried by the BAAQMD in their Base Year 1990 Emission Inventory Summary Report.[4] Table 15 presents a listing of the "major emitting facilities" located in or adjacent to the Project Area. Both of the major emitting facilities are in or next to the Southern Waterfront subarea.

The BAAQMD also publishes an emission inventory of all facilities that emit toxic air contaminants in quantities that require emissions to be inventoried.[5] Table 16, p. 214, presents a listing of all toxic air contaminant emitting facilities in or adjacent to the Project Area inventoried in 1994. Two of the three identified sources are located in or next to the Southern Waterfront subarea; those sources are also listed in Table 15 as Major Emitting Facilities of criteria air pollutants.

TABLE 15: MAJOR EMITTING FACILITIES LOCATED IN OR ADJACENT TO THE PROJECT AREA

Facility	Emissions (tons/day)				
	CO	HC	NO_X	SO_X	PM_{10}
PG&E; Hunters Point 1000 Evans Avenue/a/	0.80	0.09	4.30	0.04	0.04
PG&E; Potrero Plant 1201 Illinois Street/b/	0.46	0.06	2.96	0.59	0.05

/a/ Partially in the Project Area.
/b/ Adjacent to the Project Area at Pier 72.

SOURCE: Bay Area Air Quality Management District, Base Year 1990 Emission Inventory Summary Report, October 1, 1993.; Environmental Science Associates

Mobile sources in the Project Area include cars, trucks, buses, trains, and marine traffic such as cargo ships, ferry and excursion boats, and recreational boats. The BAAQMD publishes inventories on mobile sources for the entire City and County of San Francisco, but does not provide information specific to the Project Area. In addition, the inventory of marine vessels for San Francisco includes emissions from all vessels that travel through San Francisco Bay (including vessels going to and from Oakland and other ports). Existing CO concentrations at the intersections in and near the Project Area are shown in Table 44 in Section V.F., Environmental Impacts, Air Quality, p. 524.

SENSITIVE RECEPTORS

Some persons are considered more sensitive than others to air pollutants. The reasons for heightened sensitivity may include health problems, proximity to the emissions source, and duration of exposure to air pollutants. Land uses such as schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air-quality-related

TABLE 16: FACILITIES THAT EMIT TOXIC AIR CONTAMINANTS IN OR ADJACENT TO THE PROJECT AREA, 1994

Facility and location	Emissions (pounds/year)
H & H Ship Service (South Beach/China Basin) 220 China Basin Street	
Benzene	450
PG&E; Hunters Point (Southern Waterfront) 1000 Evans Avenue/a/	
Arsenic	0.22
Benzene	26.0
Chromium	0.02
Formaldehyde	72.00
Nickel	12.00
PG&E; Potrero Plant (Southern Waterfront) 1201 Illinois Street/b/	
Arsenic	3.40
Benzene	13.00
Beryllium	0.100
Cadmium	0.32
Chromium	0.38
Formaldehyde	210
Nickel	190

/a/ Partially in the Project Area.
/b/ Adjacent to the Project Area at Pier 72.

SOURCE: Bay Area Air Quality Management District, *Toxic Air Contaminant Control Program, Annual Report 1994*, August 1995; Environmental Science Associates

health problems than the general public. Residential areas are considered sensitive to poor air quality because people in residential areas are often at home for extended periods. Recreational land uses are moderately sensitive to air pollution, because vigorous exercise associated with recreation places a high demand on the human respiratory function. Employees are the sensitive population of concern for indoor workplace air pollutants.

Sensitive receptor locations in and near the Fisherman's Wharf subarea consist of low-income and market-rate housing units (primarily located south of Beach Street and west of Columbus Avenue).

Sensitive receptor locations in and near the Northeast Waterfront subarea consist of high-density residential complexes. Golden Gateway Center is a mixed-use residential neighborhood that has a child care center south of Broadway. High-density residential complexes are also located along the Sansome Street/Battery Street corridor and at the foot of Telegraph Hill.

Sensitive receptor locations in and near the Ferry Building subarea consist of open space areas such as Justin Herman Plaza and Pier 7. Rincon Point Park is proposed for a 4.5-acre parcel between Howard and Harrison Streets. Portions of Rincon Hill are also zoned for residential development.

Sensitive receptor locations in and near the South Beach/China Basin subarea consist of residential developments, including Bayside Village, Steamboat Point, Delancey Street and Portside condominiums, and parks and open space, including Agua Vista Park on Terry Francois Boulevard and phase one of South Beach Park.

The Southern Waterfront and surrounding area are primarily industrial except for Pier 98, Warm Water Cove, Islais Creek public access areas, and part of India Basin Park (under construction). Small pockets of residences are located on the east side of Potrero Hill west of Third Street.

NOTES - Air Quality

1 Hilken, Henry, Air Quality Planner, Bay Area Air Quality Management District, telephone conversation, November 3, 1995.

2 California Air Resources Board, *Proposed Amendments to the Area Designations for State Ambient Air Quality Standards with Maps of Area Designations for the State and National Ambient Air Quality Standards*, September 1994.

3 Abachi, Raita, Air Quality Engineer, California Air Resources Board, Mobile Source Division, telephone communication, November 3, 1995.

4 Bay Area Air Quality Management District, Base Year 1990 Emission Inventory Summary Report, October 1, 1993.

5 Bay Area Air Quality Management District, *Toxic Air Contaminant Control Program, Annual Report 1994*, August, 1995.

G. VISUAL QUALITY AND URBAN DESIGN

INTRODUCTION AND OVERALL CHARACTER

The overall character of the San Francisco waterfront varies in relation to land uses (within and near the Project Area), and geographic location. The character of the buildings and open space areas within the Project Area can be assessed through consideration of size, bulk, style, quality, and utility of urban design elements. The way these design elements fit together visually in the urban landscape can be described in terms of their visual or urban continuity.

Visual and urban continuity can be described as a series of urban features that share common design elements or common visual experience within a broader urban context. For example, buildings that share similar styles, sizes, bulks, and/or heights in an area along a segment of a street corridor have a strong visual and urban continuity. Likewise, visual or urban discontinuity is associated with design elements that lack a common set of design elements or sense of visual experience. Urban design elements and their relationship to urban and visual continuities are evaluated in the discussion of each subarea later in this section. The relationship of continuity or discontinuity to visual quality is subjective and contextual.

The developed waterfront as a whole defines the urban edge along the eastern and northern portions of the City. The strength of the transition from land to water is generally accentuated by adjacent City features. Dramatic transitional effects are most prominent in the Fisherman's Wharf, Northeast Waterfront, and Ferry Building subareas. In those subareas, the scale and density of downtown office buildings and developed hillsides and their proximity to the Project Area serve as a backdrop that defines waterfront features as a visual base to urban development inland of The Embarcadero. The South Beach/China Basin subarea serves as a transition from a "backdrop-defined" waterfront edge to an area where the waterfront area and its urban design elements are more central in the perception of the City's land-to-water transition. For example, the perception of greater space along the horizontal plane between sea wall developments and piers (and pier gaps) lends visual strength to the waterfront in the South Beach/China Basin subarea. The prominence of the waterfront in the land-to-water transition continues to increase in the Southern Waterfront subarea as the scale and character of pier-oriented structures gain visual prominence over smaller-scale adjacent urban development. Cranes, smoke stacks, and the bulk of the industrial structures in the Southern Waterfront subarea become the dominating urban features of that portion of the City.

The following discussion of each subarea includes representative photographs from within and near the Project Area. Figure 32 shows the locations of the photographs and direction of views depicted. Public views and/or public vantage points as described below are those areas considered to be within the public domain. Public views may be defined as scenes visible from areas owned and maintained by government entities that maintain uses open to the public. Views from street rights-of-way, public parks, and waterways are all areas considered in this public view analysis.

FISHERMAN'S WHARF SUBAREA

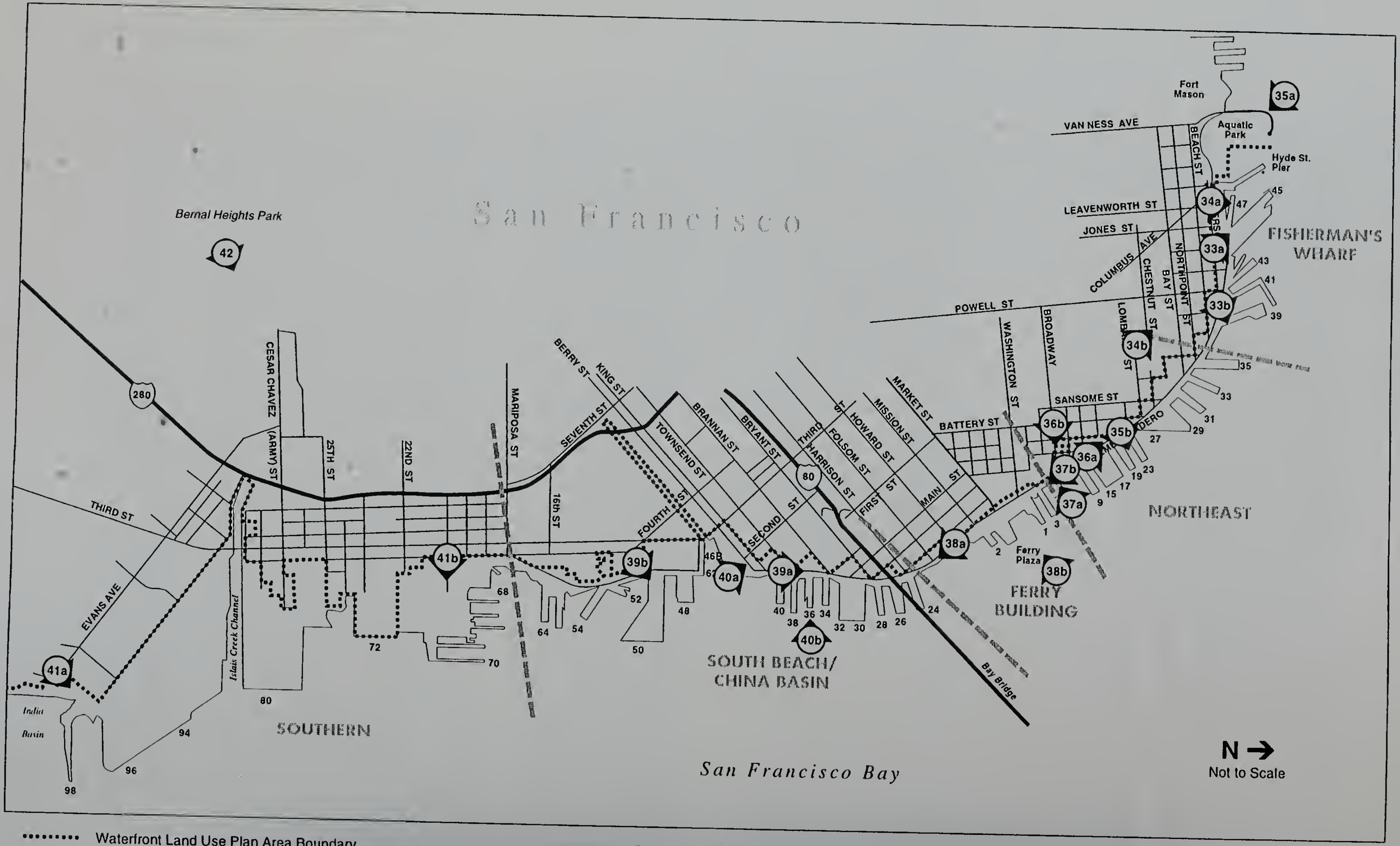
Existing Character and Urban Design

The Fisherman's Wharf subarea hosts a variety of activities that creates a diverse character for the subarea. The fishing industry, which is concentrated around Fish Alley and Piers 45 to 47, is the basis of the subarea's character (see Figure 33(a), p. 219). The Fisherman's Wharf subarea's urban design elements are an eclectic blend of large commercial warehouses, commercial and retail buildings, and piers/moorings that dock sailboats, fishing vessels, ferries and tour boats, and historic ships.

Typical structures are between two and three stories tall. Tall ship masts and large excursion and ferry boats can be considered prominent urban design elements due to their height and bulk, which fill open areas and provide a backdrop to other urban design elements (e.g., Pier 39 buildings, improved landscaped areas, pedestrian amenities) (see Figure 33(b), p. 219). Commercial signs also are a prominent urban design feature in the Fisherman's Wharf subarea.

Buildings on seawall lots in the Fisherman's Wharf subarea vary widely in bulk, height, design and exterior finishes. The buildings are generally low, not exceeding two stories, although some structural appurtenances including signs and flag poles may exceed three stories. Seawall Lots 302 and 303 (Fish Alley) and buildings adjacent to Pier 49 all share an urban street character common to development within San Francisco. These buildings commonly have zero lot lines and a variety of different facades. A variety of small kiosks, ticket booths, parking attendant booths, concession stands, and smaller retail establishments are intermingled in the triangular area defined by Jefferson Street, The Embarcadero, and Taylor Street (Seawall Lot 300/301).

The continuity of urban design in the subarea varies as perceived from streets within the subarea. Urban development along the north side of Jefferson Street between Hyde and Taylor, and views



······· Waterfront Land Use Plan Area Boundary
(Plan Area boundary and subarea boundaries are approximate.)

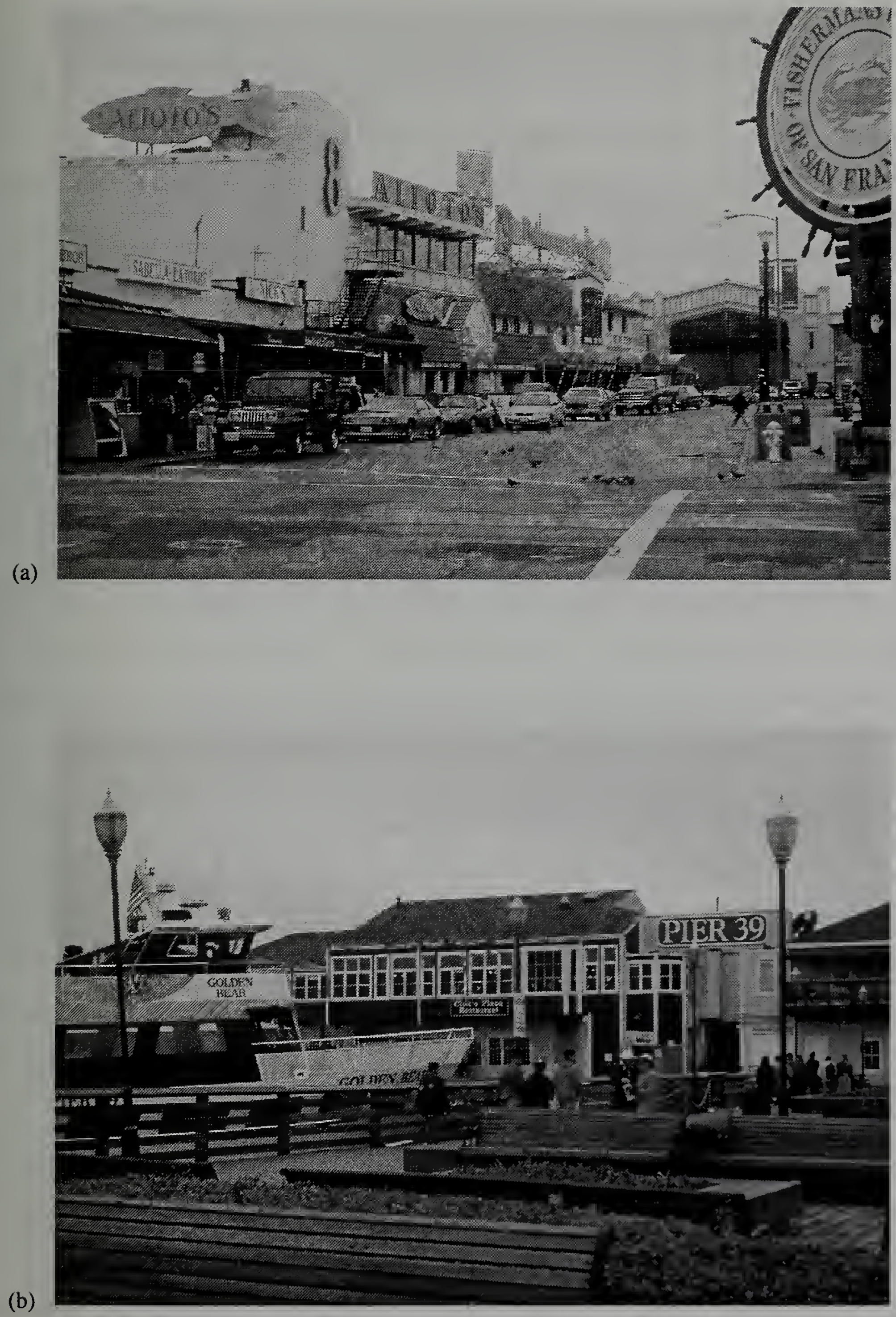
NOTE: The Port also owns property south of India Basin, shown on the subarea map of the Southern Waterfront (Figure 6b).

▬ ▬ ▬ Subarea Boundary

38b Photo Vantage Point

SOURCE: Environmental Science Associates

Figure 32



Environmental Science Associates
Refer to Figure 32 for vantage points.

San Francisco Waterfront Land Use Plan EIR ■

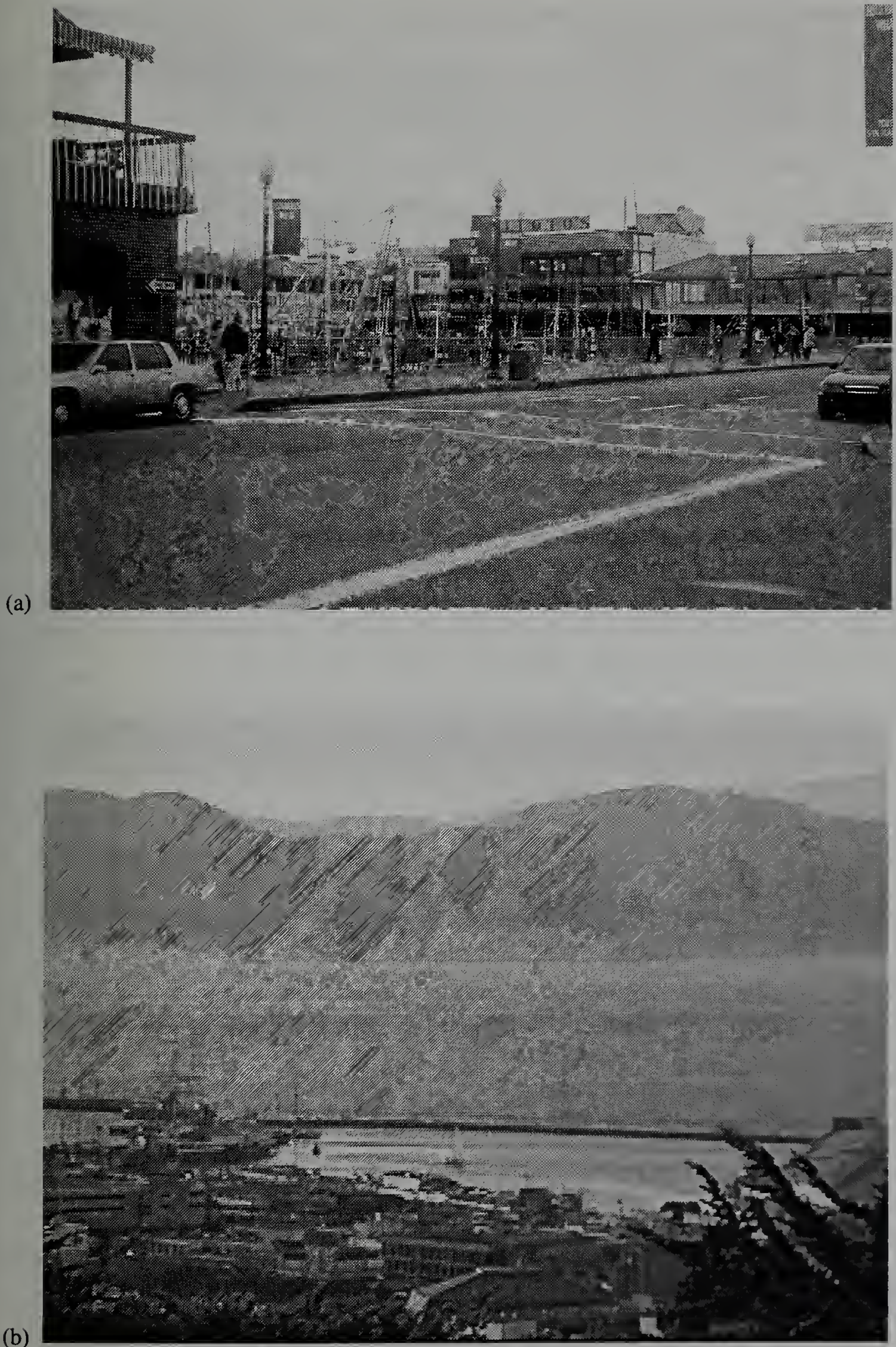
Figure 33

Views of Fisherman's Wharf Subarea (a and b) along Taylor facing northwest to Piers 45 and 49 have strong visual continuity. The similar heights of the buildings present a uniform sense of building mass to the street. Facade setbacks are a discontinuous feature along Jefferson Street. Some facades extend to the street as pedestrian arcades but facades generally extend into sidewalk areas along a common setback line. The open view from Jefferson Street (between Jones and Taylor Streets) to fishing boats in the Inner Lagoon provides a visual break from building facades and may be considered a visually attractive discontinuous feature (see Figure 34(a)).

Continuous open areas, associated with parking areas, help to define the visual quality of the area along the north side of Jefferson Street, between Taylor and Powell Streets. Discontinuous urban elements that break up the openness of the parking area generally include detached buildings, buses, and kiosks. East of Powell Street, Pier 39 buildings and architectural elements provide a strong visual continuity that stems from the common height and bulk of buildings and the unified design theme. Open space on the sea wall at Pier 35½ provides continuity southeast of Pier 39. Continuity in this narrow open space area is highlighted by a common landscaping theme. The Pier 39 parking structure (and elevated foot bridge) on Seawall Lot 311 form a discontinuous building feature on the south side of The Embarcadero. The building's use of concrete as an exterior material and the relative scale of the four-story structure contrast with adjacent urban development and the open space area across The Embarcadero.

Because the majority of the waterfront in the Fisherman's Wharf subarea is built out with piers that have structures on them, the land/water interface is generally obstructed by development. The open water areas of the inner lagoon provide a defined land/water interface on Jefferson Street, between Jones and Taylor Streets. Adjacent to Piers 41 and 43 and at Pier 35½ there are additional land/water interfaces visible to the public.

Streetscape design and pedestrian amenities generally highlight the Fisherman's Wharf maritime theme. For example, wood pilings are used throughout the area (e.g., for bollards, fencing, signs). Despite having a common maritime theme, specific streetscape design elements throughout the subarea vary due to differing dates of amenity installations. Some of the unifying streetscape amenities include wood barrel trash cans, specialty park benches, specialty street lamps, railroad ties used for planters, street and planter trees, and large iron rope cleats. Surface treatments vary between brick-pavers in front of Pier 39 and asphalt throughout the open space/park area.



nvironmental Science Associates
efer to Figure 32 for vantage points.

Figure 34
Views of Fisherman's Wharf Subarea (a and b)

The streets surrounding the triangular shaped parking lot (Seawall Lot 300/301) have common San Francisco street and pedestrian amenities including standard capped trash cans, light poles, green kiosks, and typical concrete sidewalks. Street trees are located along the Jefferson Street side of the parking triangle. Portable chairs, tables, and stools line the areas outside of restaurants and fishmarket areas. Street and pedestrian amenities along Jefferson Street (between Taylor and Hyde Streets) are generally similar to those in the parking lot triangle area.

Relationship to Adjacent Areas

The area south of Jefferson Street between Powell and Hyde Streets visually defines the boundary of adjacent City development. Commercial establishments on the south side of Jefferson Street each have unique features that typically contrast with development on the north side of Jefferson Street. The height and bulk of buildings in this area are slightly greater than those within the Project Area. While zero lot lines are common to the general area, the adjacent buildings have a greater differentiation of building heights and facade features. Attraction signs and lighting in adjacent areas are typically more visually intrusive and directed toward Fisherman's Wharf.

Public Views

For purposes of discussing the Fisherman's Wharf subarea, short-range views are within two to three blocks of the subarea. Medium-range views extend to Lombard Street, long-range views are generally blocked as discussed below.

Public Views of the Subarea

From the Land. Public views from land areas surrounding the subarea are affected by topography and urban development. Public views of the subarea and the Bay (including panoramic views) are available from multiple locations on the tops and along north-facing slopes of Russian Hill and Telegraph Hill. Those hills block long-range views of the subarea from locations to the south. Short-range views are typically viewed through street corridors surrounding the subarea. Street corridor views extend to medium-range views from hills on nearby streets, looking down or along streets that connect to the subarea. For example, views to the north from Lombard Street at intersections include small subarea segments. Medium-range public views of the subarea from Pioneer Park, on the top of Telegraph Hill (near Coit Tower), are interrupted by vegetation and buildings; as a result, the subarea is a less prominent part of the overall panoramic view. Views from this vantage point include the Hyde Street Pier, the parapet walls and roofs of Jefferson Street buildings (between Hyde and Taylor Streets), the roofs of warehouse buildings on Pier 45, the far waterside edges of the ferry boats docked at Piers 43 and 41, and roof portions of Pier 39 buildings and its eastern marina (see Figure 34(b), p. 221). A long-range view from Coolbrith Park, on the top of Russian Hill, provides distant views of the subarea in-between buildings; visible parts of the subarea include Pier 43½, Pier 41 and Pier 39 and its adjacent marinas. In general, the land/water interface as viewed from elevated areas is strongest in areas and on piers with few or no structures (e.g., Piers 43 and 43½).

From the Water. Views from the water between the Hyde Street Pier and the end of Pier 45 are limited horizontally by the concrete breakwater that protects lagoon areas. Views of this portion of the subarea include the deck and masts of the historic ships docked at the Hyde Street Pier, as well as the upper half of buildings surrounding Fish Alley, and the masts of fishing boats in the lagoon areas (see Figure 35(a)). Landside buildings, the Pier 39 parking structure, tall streetscape elements (trees and lightpoles), pedestrians, parked cars, and parked ferryboats are visible in views from the water adjacent to Piers 41 and 43. The height and bulk of the Pier 39 and Pier 45 buildings and warehouses, respectively, are visually prominent features of the Wharf's pier-side development. The concrete breakwater and Pier 41 (on the west side) limit views of the marinas adjacent to Pier 39.

Public Views from the Subarea

There are many views available from within the Fisherman's Wharf subarea. Depending on the vantage point, views available include the Bay, lagoon and marina areas, the Marin hills and Mount Tamalpais, Alcatraz, and Angel Island. Public pier viewpoints include Pier 39, Pier 41, and the Hyde Street Pier. Public views from streets are available from segments of The Embarcadero and Jefferson Street.

NORTHEAST WATERFRONT SUBAREA

Existing Character and Urban Design

The character of the Northeast Waterfront subarea and adjacent non-Port areas inland along The Embarcadero differs from that along the east (water) side. New and renovated commercial buildings and development and surface parking set the character of The Embarcadero's west side.

(a)

(b)

SOURCE: Environmental Science Associates
Refer to Figure 32 for vantage points.

San Francisco Waterfront Land Use Plan EIR

Figure

Views of Fisherman's Wharf and Northeast Waterfront Subareas (a and

Urban design elements on the west side include medium-density office buildings with typical exteriors incorporating a brick facade design. The brick facades mimic the historic warehouse character of the larger northeast waterfront area. The east side of The Embarcadero has a monumental character created by classical design elements on pierhead and bulkhead exteriors (see Figure 35(b), p. 224). The pierhead and bulkhead exterior designs are a prominent and distinct architectural feature that defines The Embarcadero's eastern views within the subarea.

Seawall lots west of The Embarcadero in the Project Area generally are developed with three-story office buildings and a gas station. Some seawall lots are open areas with surface parking lots or landscaping. With a few minor exceptions, piers to the east are substantially built out. A few warehouse accessory buildings are dispersed along the sea wall.

Along the west side of The Embarcadero, the office buildings set the continuity of the urban pattern. Discontinuous elements include open parking areas, a restaurant and a gas station. Along the east side of The Embarcadero, the series of pierhead and bulkhead buildings creates a well-defined continuous urban pattern. Open areas in between piers, the open Pier 7, and the restaurant at Pier 7½ are features of discontinuity. The land/water interface is affected by the presence of finger piers with pier sheds; views of the interface are limited to some areas in between the piers where the water meets the sea wall adjacent to The Embarcadero. Streetscape and pedestrian amenities along The Embarcadero include specialty lamp posts, specialty benches, cobblestone pavers, specialty concrete sidewalks with illuminated glass block tiles, specialty bollards, and Port of San Francisco red-capped trash cans (see Figure 36(a)). The Embarcadero right-of-way has a strong sense of urban and visual continuity due to the united streetscape and pedestrian amenities.

Relationship to Adjacent Areas

On the west side of The Embarcadero, development and its design elements blend with those of the adjacent areas to the west due to similar design features including heights, bulks, and exterior finishes. On the waterside of The Embarcadero, the visual continuity of pierhead and bulkhead buildings is different from the elements of the Fisherman's Wharf subarea to the north. To the south, pierhead and bulkhead buildings with similar design features link the Northeast Waterfront visually with the Ferry Building subarea.

(a)

(b)

SOURCE: Environmental Science Associates
Refer to Figure 32 for vantage points.

Figure

Views of Northeast Waterfront Subarea (a and

Public Views

For purposes of discussing the Northeast Waterfront subarea, short-range views of the subarea are between two and three blocks. Medium-range and long-range views from land are generally blocked by urban development, as discussed below.

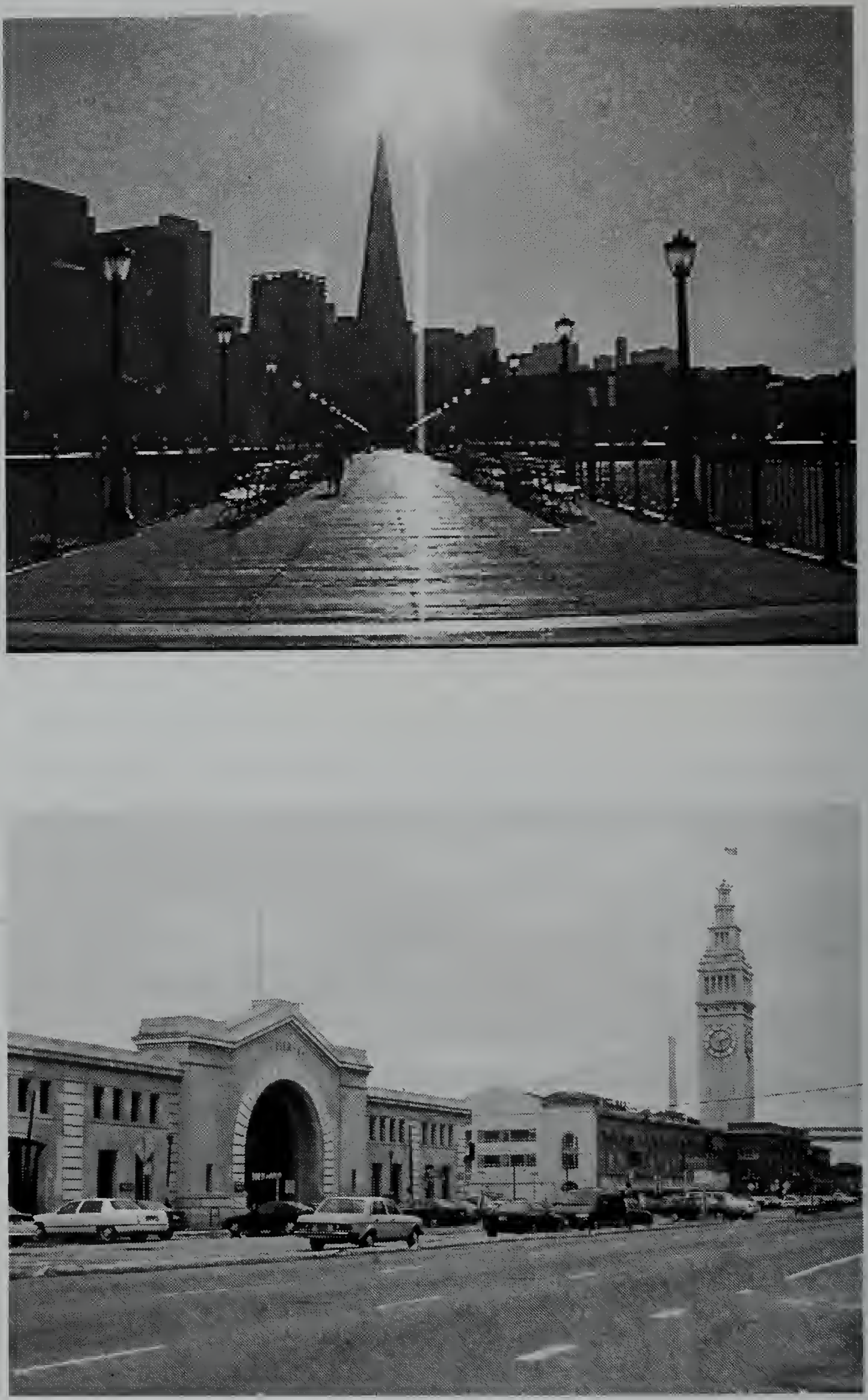
Public Views of the Subarea

From the Land. Public views from land surrounding the subarea are limited due to topography and urban development. However, the east side of Telegraph Hill affords excellent views of portions of this subarea from many locations. Short-range and medium-range views are typically through street corridors connecting to and surrounding the subarea. For example, a person looking east along Broadway can see portions of Pier 7 and the Bay (see Figure 36(b), p. 226). Other view corridors along connecting streets end in pierhead and bulkhead buildings.

From the Water. The quality of water views depends on the distance from land and pier structures. At a distance of approximately 1,000 feet from the piers, piers and pier sheds dominate the view. A viewer can see the detail of structures and read pier numbers displayed on the ends of pier sheds. Excursion boats and other vessels moored at the piers can be observed. In between most piers, shorter-range views are generally blocked by the bulkhead structures, but activity along The Embarcadero, elevated streetscape amenities (e.g., lampposts, street, trees), and some office buildings may be observed. Longer-range views (such as one recorded near Treasure Island) offer a perception of the general bulk and forms of warehouse structures; at this distance structures within the subarea become a visual base to City development in the background. Dynamic view sequences from vehicles on the upper deck of the Bay Bridge include views of pier structures; the extent of bridge waterfront views depends on vehicle height and lane position.

Public Views from the Subarea

Public views of the Bay and the City are most prominent and accessible from Pier 7 (see Figure 37(a)). Views across the Bay include the East Bay Hills and urban landscape features, Treasure and Yerba Buena Islands, and the Bay Bridge. Segmented views of the Bay, to the east, are also available in between pierhead and bulkhead structures and other buildings along The Embarcadero.



(a)

(b)

SOURCE: Environmental Science Associates
Refer to Figure 32 for vantage points.

Figure

Views of Northeast Waterfront and Ferry Building Subareas (a and

FERRY BUILDING SUBAREA

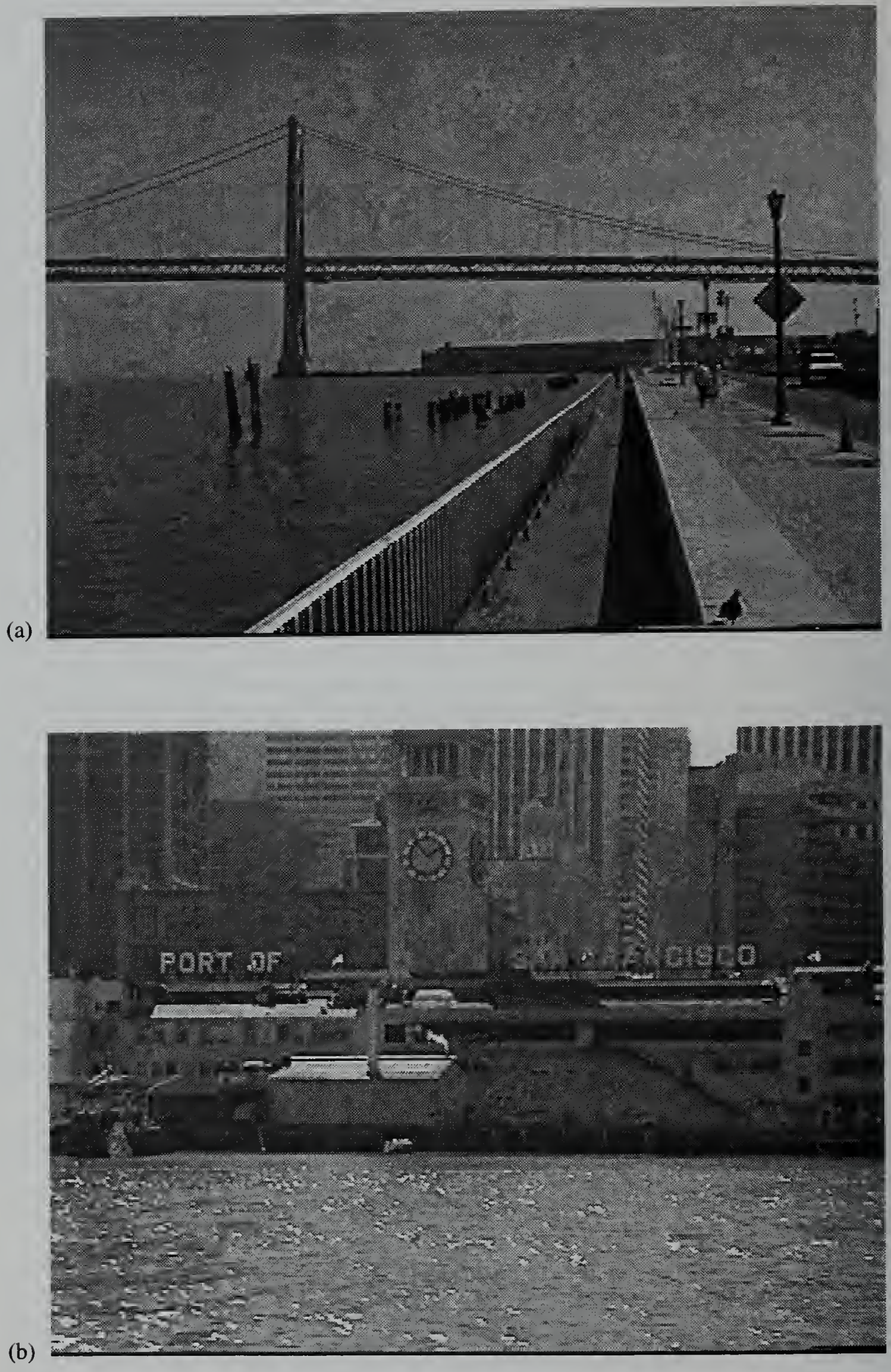
Existing Character and Urban Design

The character of the Ferry Building subarea is defined by pierhead and bulkhead structures, the Ferry Building, Agriculture Building ferryboat activities, and pedestrian spaces along the east side of The Embarcadero. The areas along the west side of The Embarcadero are outside of the Project Area, with the exception of a few seawall lots that do not share a common visual association with respect to the adjacent City landscape. The ornate pierhead and bulkhead structures and the Ferry Building on the east side of The Embarcadero have monumental urban design elements in the form of classical architectural design on pier bulkhead exteriors, the Agriculture Building, and the Ferry Building, and its clock tower (see Figure 37(b), p. 228). The Embarcadero right-of-way is a large urban space within the subarea dominated by moving and parked vehicles.

Seawall Lot 351, on the corner of Washington Street and The Embarcadero, is the only developed seawall lot north of the Ferry Building; it contains a single-story gas station and associated gas island. Piers 1 and 3 to the east of The Embarcadero have the same classical design elements on pierhead and bulkhead exteriors as in the Northeast Waterfront subarea. Pier 5 includes a bulkhead building but not any pier structures. The three-story Ferry Building and 240-foot clock tower comprise the dominant structure that defines the end of Market Street and is a visual center point relative to adjacent subareas to the north and south. One- and two-story accessory and restaurant buildings are located on the Ferry Plaza Pier behind the Ferry Building. The two-story brick Agricultural Building is the southernmost structure in the subarea.

The visual continuity within the subarea is defined by the pierhead and bulkhead structures, the Ferry Building, and the Agricultural Building, which provide a common street frontage and defined urban edge along the east side of The Embarcadero. Discontinuities among these structures are related to different building bulks, exterior facades, and heights. The open areas of The Embarcadero right-of-way include more discontinuities than other sections of The Embarcadero because of the presence of parking areas in the center of the roadway.

The land/water interface is most prominent along the Promenade between the Agriculture Building and the southern end of the subarea, north of Pier 22½ (see Figure 38(a)) and at Ferry Plaza. The Promenade provides the most accessible and the longest continuous land/water interface in all the waterfront subareas. The Promenade interface is visible to persons in vehicles



SOURCE: Environmental Science Associates
Refer to Figure 32 for vantage points.

Figure

Views of Ferry Building Subarea (a and

on The Embarcadero and pedestrians walking or sitting along the Promenade. Some streetscape and pedestrian amenities along The Embarcadero will be installed as part of the MUNI Metro Turnback project; others would be installed if the proposed Mid Embarcadero Roadway is approved and built (see discussion of that project in Chapter III, Project Description). Amenities in the subarea include specialty lamp posts, specialty benches, cobblestone pavers, specialty bollards, and standard capped trash cans.

Relationship to Adjacent Areas

The Ferry Building subarea is dwarfed in height, bulk and scale by the high-density office development west of The Embarcadero. Justin Herman Plaza, with its open space and landscaping, acts as a visual buffer between the subarea and the adjacent office development. Despite their smaller scale, the Ferry Building and the adjacent structures define the City's urban edge at the street level between Mission and Washington Streets. The subarea's historic buildings create an urban design contrast with the adjacent commercial high-rise development. South of Mission Street, low-rise buildings in the adjacent area, many historic in character, define the urban edge of the City.

Public Views

For the purposes of discussing the Ferry Building subarea, short-range views of the subarea are between two and three blocks. Medium-range and long-range views from land are generally blocked by urban development, as discussed below.

Public Views of the Subarea

From the Land. Public views from land surrounding the subarea are limited due to topography and urban development. High rise buildings to the west block long-range views from elevated western areas of the City. Short-range views are typically through street corridors surrounding the subarea. Street corridor views extend to medium-range views on streets that connect to the subarea. For example, looking east along Market Street a person can see portions of the Ferry Building and its clock tower; view corridors along Howard and Folsom Streets include water views. Dynamic view sequences from vehicles on the upper deck of the Bay Bridge include views of pier structures and the Ferry Building; the extent of bridge waterfront views depends on vehicle height and lane position.

From the Water. The quality of water views depends on the distance from land and pier structures. At a distance of approximately 1,000 feet from the piers, piers and pier sheds dominate the view. A viewer can see the detail of pier structures, read pier numbers on the ends of pier sheds, and the words "Port of San Francisco" displayed on top of the Ferry Building (see Figure 38(b), p. 230). Ferry boats berthed at Pier ½ can be observed. In between some piers and along the Promenade, elevated streetscape amenities (e.g., lampposts) may be observed. Longer-range views (such as one recorded near Treasure Island) offer a perception of the general bulk and forms of pier structures and the contrasting white Ferry Building tower; at this distance structures within the subarea are a visual base to City development in the background.

Public Views from the Subarea

Public views of the Bay are most prominent and accessible from the Promenade and from the end of the Ferry Plaza Pier. Views across the Bay include the East Bay Hills and urban landscape features, Treasure and Yerba Buena Islands, and close views of the Bay Bridge. Segmented views, to the east, of the Bay and the features mentioned above are also available in between piers and buildings along The Embarcadero.

SOUTH BEACH/CHINA BASIN SUBAREA

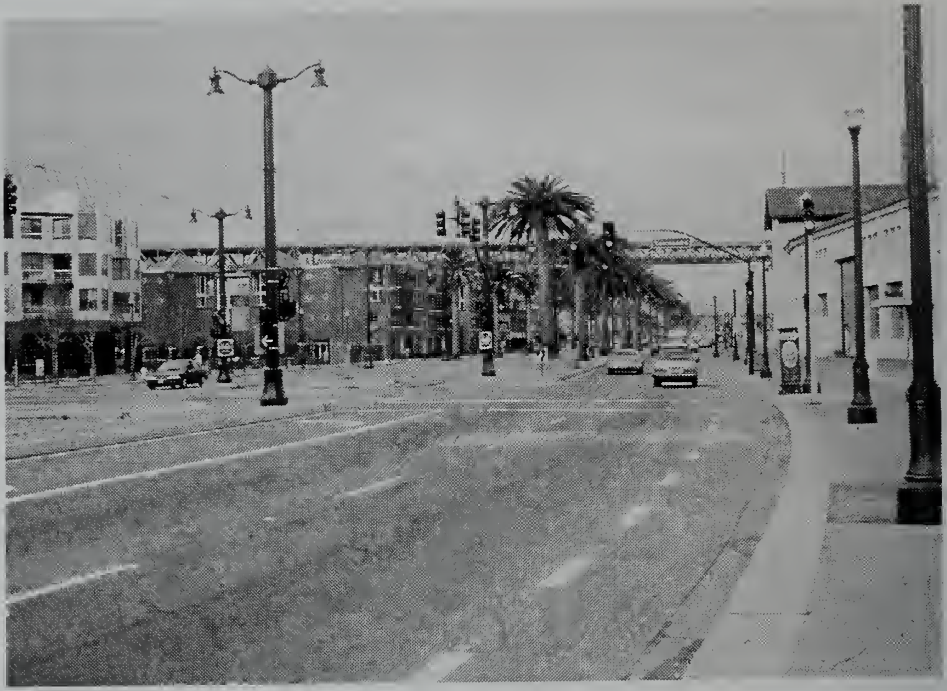
Existing Character and Urban Design

Within the subarea, there are contrasts between the area north of China Basin Channel (South Beach) and the area south of the China Basin channel to the Central Basin. The character of the South Beach portion of the subarea may be further divided by The Embarcadero. The apartment/condominium buildings west of The Embarcadero have an active residential character that is complimented by retail commerce at the street level. The character of this development contrasts in architectural form with pier structures and accessory buildings along the east side of The Embarcadero and south side of Berry Street. The South Beach Yacht Harbor is the only waterside maritime development that corresponds to the nearby apartment buildings, as they share a modern urban design. South of China Basin Channel, an industrial and warehouse character dominates the subarea. Large maintenance and storage yards, active maritime uses, warehouses, boats on trailers, boat docks, and railroad tracks make up the elements that define the industrial waterfront character in that area.

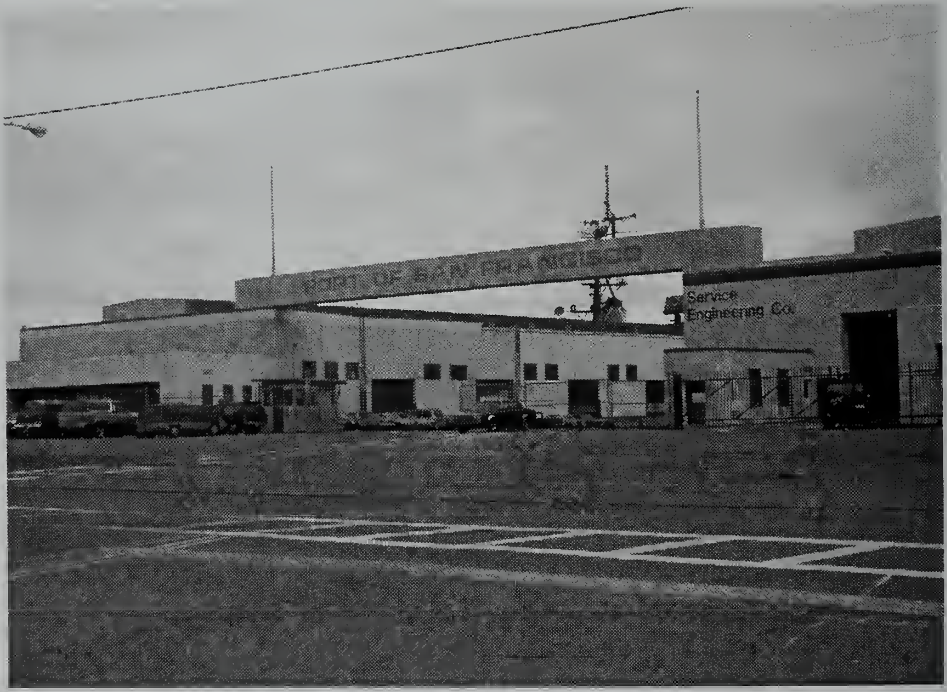
Four-story apartment buildings are common on the seawall lots west of The Embarcadero, in the South Beach area (see Figure 39(a)). The bulk of these apartment buildings appears to fill their roughly triangular-shaped lots. The parcel between Beale and Bryant Streets and The Embarcadero (Seawall Lot 330) is used for a surface parking lot. At the end of Berry Street, phase one of South Beach Park is adjacent to the South Beach Yacht Harbor. A large wooden ship (on land) that is used as a restaurant, and a two- to three-story iron sculpture are two highly visible structures located at the north end of the park. On the east side of The Embarcadero, pierhead and bulkhead buildings, pier sheds, accessory structures and small restaurants are spread out along the South Beach waterfront. Pier 30/32 is the largest pier in the South Beach area and has no permanent structures. The north side of the China Basin channel is lined with structures, including Port maintenance facilities at Pier 46B; and the China Basin Landing office and retail development just outside of the Project Area. Houseboats are docked west of the Fourth Street Bridge within this channel. West of the Third Street Bridge, the south side of the channel is open linear park. The Third Street and Fourth Street Bridges are themselves visually prominent elements in the subarea, and the Third Street Bridge in particular provides a visual landmark and break between the South Beach and China Basin areas.

The area south of China Basin Channel is generally filled with large pier structures and warehouses, and with a variety of smaller accessory structures. Buildings with large footprints and heights of about two stories are common on the seawall lots and piers used for ship repair and cargo operations near the China Basin Channel (Piers 48 and 50) (see Figure 39(b)). A variety of commercial buildings, small warehouses, piers, and boat docks are located near the Central Basin. The buildings adjacent to the Central Basin generally have small building footprints and bulks, with heights between one and two stories. Pier 64½ is an open fishing pier that serves the Central Basin area at Aqua Vista Park; the pier is contrasted by the old Pier 64's decaying wood pilings that outline a once large pier.

The apartment buildings in the South Beach area provide visual continuity along the west side of The Embarcadero, through common design themes and similar height and bulk. The mix of different pier structures, accessory structures, and small restaurants along the east side of The Embarcadero presents a discontinuity of urban forms and design elements. The South Beach Harbor segment of the waterfront provides unique urban design continuity through its particular waterfront amenities and design. South of China Basin Channel, along Terry A. Francois Boulevard and Illinois Street, the subarea's visual continuity is weak as compared to traditional urban street corridors. Some pockets within the subarea that include common uses



(a)



(b)

SOURCE: Environmental Science Associates
Refer to Figure 32 for vantage points.

Figure

Views of South Beach/China Basin Subarea (a and such as industrial warehousing, open space areas, and waterfront commercial buildings provide clusters of more defined visual continuity.

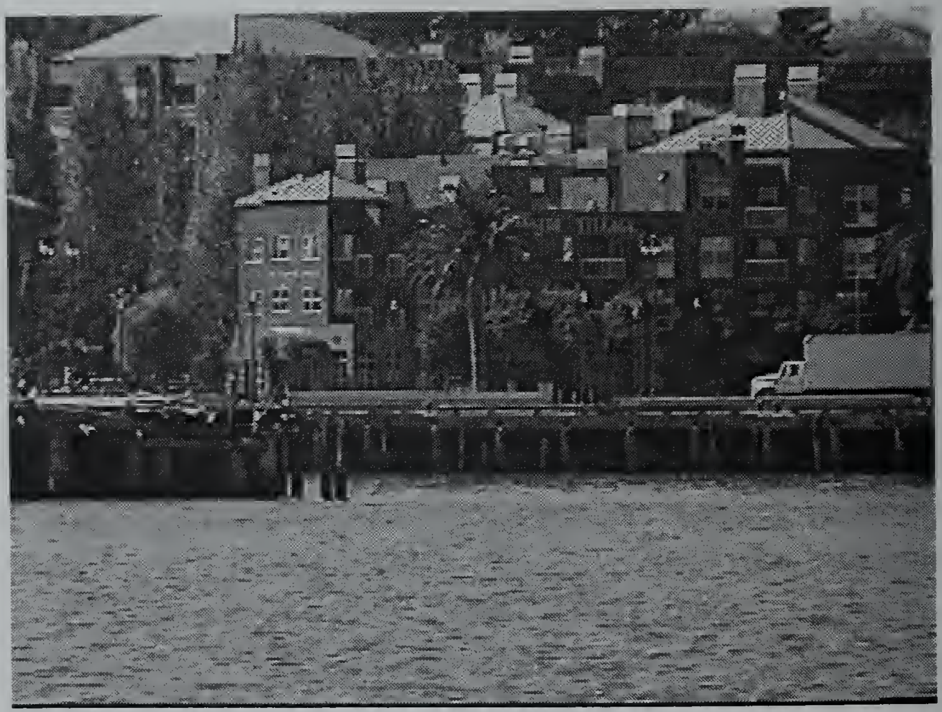
The land/water interface in the South Beach area is pronounced along The Embarcadero because of the large gaps between some finger piers and the presence of the South Beach Harbor. The linear park on the south side of China Basin Channel provides a land/water interface. The public boat ramp at Pier 52 and the areas between Pier 54 and Pier 64½ provide areas of highly visible land/water interface.

Streetscape and pedestrian amenities were installed, in South Beach, along The Embarcadero as part of the Waterfront Transportation Projects. Amenities in that portion of the subarea include specialty lamp posts, specialty benches, cobblestone pavers, specialty concrete sidewalks with illuminated glass block tiles, street trees and palm trees along the light rail corridor, specialty bollards, and standard capped trash cans. The Embarcadero right-of-way has a strong sense of urban and visual continuity due to the united streetscape and pedestrian amenities. In the South Beach Harbor Area, specialty tree planters, trash cans, and bollards all match in a unifying design theme (see Figure 40(a)); waterfront railings, gates, and waterfront lamps also represent specialized urban design unique to the South Beach Yacht Harbor area. There are virtually no streetscape or pedestrian amenities in the portion of the subarea south of China Basin Channel. Some amenities provided in this area include picnic tables at Agua Vista park and standard street lamps.

Relationship to Adjacent Areas

Warehouse, office, and apartment buildings west of the South Beach area blend well with apartment buildings along The Embarcadero. While some of the adjacent buildings are greater in height than the apartment buildings in the Project Area, the building bulks are generally similar. Adjacent areas west of the waterfront, south of China Basin Channel, have similar industrial and warehouse structures. Similar to buildings within the Project Area, the buildings in adjacent areas are generally large in bulk and have heights between two and three stories. The Ferry Building subarea, to the north, is visually disconnected from the South Beach/China Basin subarea due to the elevated Bay Bridge and tower footing. In comparison to the Northeast Waterfront and Ferry Building subareas, the waterside portion of the South Beach area is less dense with pier development and more open to the Bay. As a result of similar urban design

(a)



(b)

SOURCE: Environmental Science Associates
Refer to Figure 32 for vantage points.

Figu

Views of South Beach/China Basin Subarea (a a elements and character, the portion of South Beach/China Basin subarea south of China Basin Channel is similar to the Southern Waterfront subarea to the south.

Public Views

For purposes of discussing the South Beach/China Basin subarea, short-range views of the subarea are from one block away (South of Market city blocks are longer); medium-range views vary from two to three blocks to areas adjacent to Interstate 280; and long-range views extend beyond Interstate 280, as discussed in the text below.

Public Views of the Subarea

From the Land. Public views from land surrounding the subarea are limited due to urban development. Short-range views are typical through street corridors leading to and surrounding the South Beach area. Street corridor views extend to medium-range views on some streets that are connected to the subarea; for example, views of the Bay are available looking east along Brannan Street and Harrison Street. South of China Basin Channel, views from connecting streets are limited because few streets connect with the waterfront street, Terry A. Francois Boulevard. The few streets that do connect with the waterfront typically provide views of building fronts.

There are a variety of medium-range views from elevated roadways west and north of the subarea. Dynamic view sequences from vehicles along Interstate 280 include views of the pier structures, cranes, and China Basin Channel/Mission Creek Marina. Dynamic view sequences from vehicles on the upper deck of the Bay Bridge include views of pier structures and apartment buildings; the extent of bridge waterfront views depends on vehicle height and lane position. Long-range views of portions of the subarea are available from the northern portions of Potrero Hill and the top of Twin Peaks Boulevard. From Twin Peaks a thin horizontal strip of waterfront areas (generally south of China Basin Channel and north of Potrero Hill) is visible.

From the Water. The quality of views from the water depends on the distance from land and the presence of pier structures. At a distance of approximately 1,000 feet from the piers, a person can see the detail of pier structures, and read pier numbers displayed on the ends of piersheds. Between Piers 26 and 40, elevated street amenities (e.g., trees, street lamps), seawall lot apartments, and activities along The Embarcadero are visible from the water (see Figure 40(b), p. 236). Other pier and seawall lot features visible south of China Basin Channel include cranes, trucks and trailers, and storage areas. Tugboats and large ships can be observed. Between Piers 54 and 64½ cars and activities along Terry A. Francois Boulevard and warehouse buildings outside of the Project Area may be observed.

From the Subarea

Public views of the Bay are prominent in the South Beach area (Piers 30-32, South Beach Yacht Harbor), between Piers 54 and 64½ along Terry A. Francois Boulevard, and at Aqua Vista Park. Views from the Aqua Vista Park area include the East Bay hills (under good atmospheric conditions).

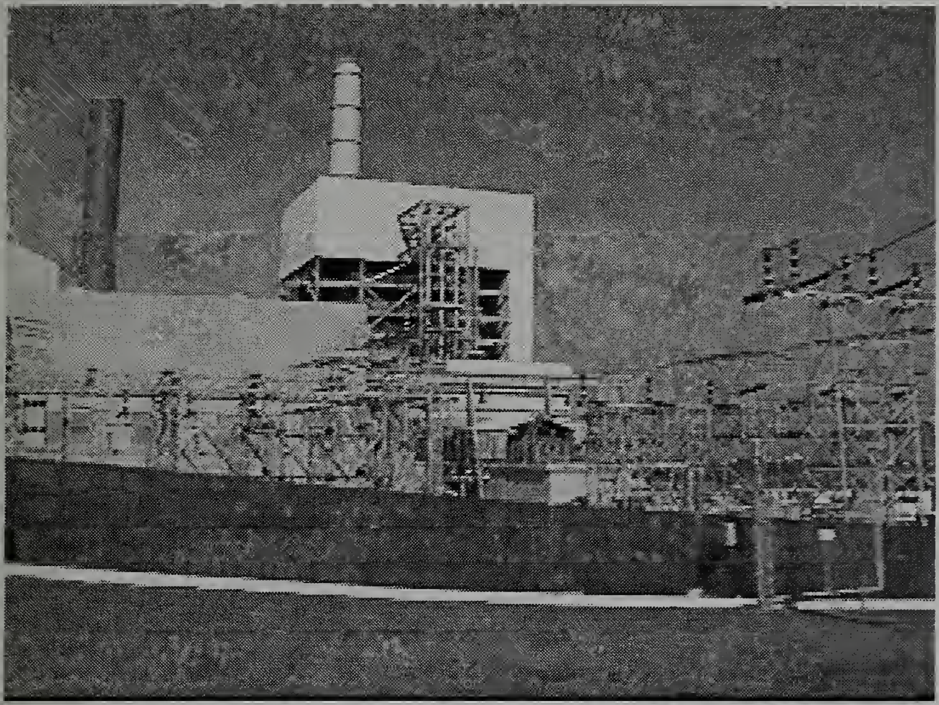
SOUTHERN WATERFRONT SUBAREA

Existing Character and Urban Design

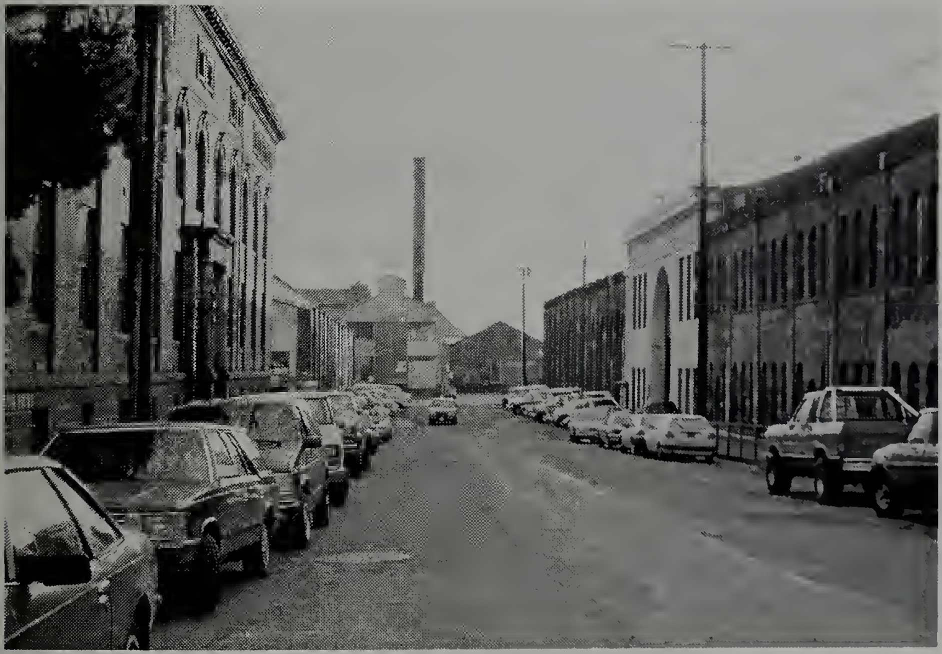
An industrial and warehouse character dominates the Southern Waterfront subarea. Urban design elements that give the subarea a working industrial waterfront character include large maintenance and storage yards, warehouses, container cranes, railroad tracks, grain silos and smoke stacks. The character of most open spaces is one of industrial storage yards with maritime and cargo-related equipment and materials.

Large building bulk is part of the industrial/warehouse character observed throughout the subarea. Building heights are dominated by taller cargo cranes, grain elevators and silos, and smoke stacks. Two electric power plants (at India Basin, and, outside the Project Area, Pier 72) provide some of the most visually dramatic industrial infrastructures with their smoke stacks, towers, and fuel storage tanks (see Figure 41(a)). The Southern Waterfront's visual continuity is weak as compared to street corridors and urban landscapes in other subareas. The Southern Waterfront was not generally designed or built with a unifying set of design elements that forms a sense of visual or urban continuity. Some pockets within the subarea with common uses such as industrial warehousing and cranes, dry docks, open-air industrial storage areas, and waterfront commercial buildings provide clusters of more defined visual continuity. For example, the buildings located near the corner of Illinois and Twentieth Streets share historically unique urban design and architectural features (see Figure 41(b)).

The land/water interface in the subarea is generally obstructed by development, as most of the waterfront is utilized for piers and is not publicly accessible. Public areas where the land/water



(a)



(b)

Environmental Science Associates
Refer to Figure 32 for vantage points.

San Francisco Waterfront Land Use Plan EIR ■

Figure 41

Views of Southern Waterfront Subarea (a and b) interface is visible include Pier 98 and the Warm Water Cove Park. Other land/water interface areas that border onto private properties include areas around India Basin, areas adjacent to the Islais Creek Channel, the Western Pacific property, and PG&E properties. The subarea typically does not have streetscape or pedestrian amenities. Amenities within Warm Water Cove Park include park benches, picnic tables, and a small dock.

Relationship to Adjacent Areas

West of the subarea there is a mix of warehouse buildings and industrial uses that have a strong visual relationship to waterfront areas due to their common building bulk. Building and structure heights do not meet those of cargo cranes and smoke stacks within the subarea. The tallest structure in the adjacent area is the Interstate 280 freeway. Industrial and maritime uses to the north (South Beach/China Basin subarea) and south (Hunters Point Naval Ship Yard) connect visually with similar uses in the Southern Waterfront subarea.

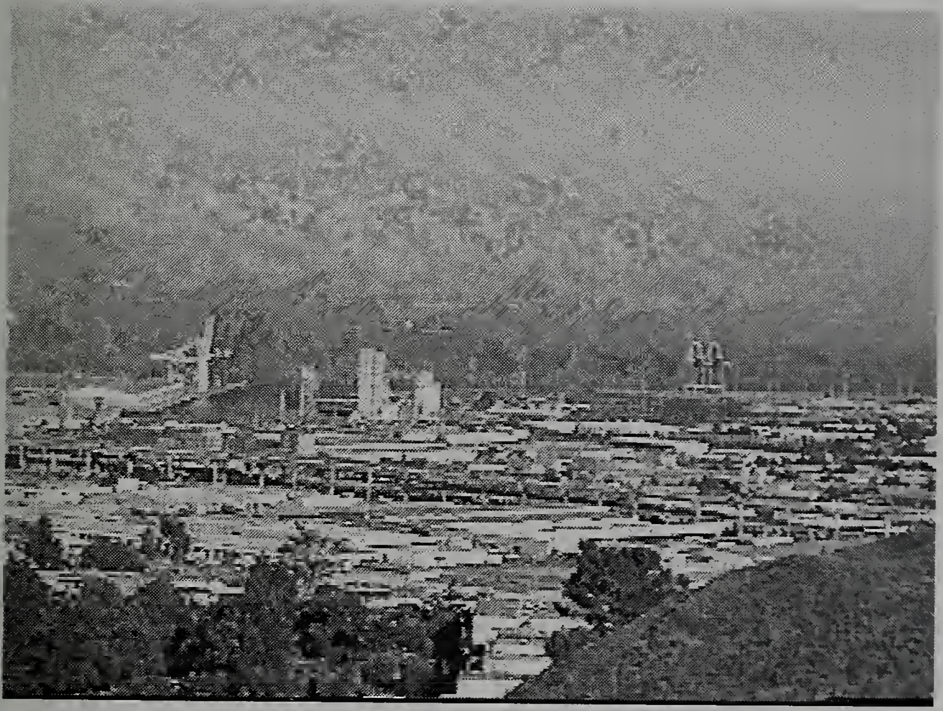
Public Views

For purposes of discussing the Southern Waterfront subarea, short-range views of the subarea are from two to three blocks away; medium-range views are from areas adjacent to Interstate 280; and long-range views extend beyond Interstate 280, as discussed in the text below.

Public Views of the Subarea

From the Land. Public views from land surrounding the subarea are limited due to urban development. Short-range views are typical through street corridors surrounding the subarea. Street corridor views extend to medium-range views on some streets that connect to the subarea. Views from connecting streets are limited because few streets extend to or connect with the waterfront. Dynamic view sequences from vehicles along Interstate 280 include medium- to long-range views of the pier structures, cranes, and smoke stacks. Long-range elevated views of the subarea can be seen from portions of Potrero Hill, Bernal Heights and Hunters Point (see Figure 42). Long-range views of portions of the subarea are available from the top of Twin Peaks Boulevard, where a horizontal strip of waterfront features (e.g., large piers, cranes) is visible north and south of Potrero Hill.

From the Water. The quality of views from the water depends on the distance from land and pier structures. At a distance of approximately 1,000 feet from the piers, a person can see the detail



(a)

Environmental Science Associates
Refer to Figure 32 for vantage points.

Figure 42
View of Southern Waterfront Subarea

of pier structures. Other pier and seawall lot features include cranes, trucks and trailers, and open space industrial storage and soil storage areas. Tugboats, large ships, and dry dock facilities (at Piers 68 and 70) can be observed.

Public Views from the Subarea

Public views of the Bay are prominent from Warm Water Cove Park and Pier 98. Views from Warm Water Cove Park include the East Bay hills (under good atmospheric conditions) and adjacent piers, which extend well beyond the park. Views from Pier 98 include the East Bay hills (under good atmospheric conditions), the adjacent Pier 96 (to the north), and the India Basin area (to the south).

Plans and Policies

Height and Bulk Limits

Height and bulk limits are discussed in Section IV.B., Environmental Setting, Land Use and Zoning, pp. 110-161.

Related Plans and Policies

The San Francisco Master Plan includes visual quality and urban design related objectives and policies within the Urban Design Element and Recreation and Open Space Element. Objectives related to visual quality and urban design in the Urban Design Element are included as follows, with specific applicable policies noted in parenthesis.

> **City Pattern** - Objective 1: Emphasis of the characteristic pattern which gives to the City and its neighborhoods an image, a sense of purpose, and a means of orientation. (Policies 1 and 8)
>
> **Conservation** - Objective 2: Conservation of Resources which provide a sense of nature, continuity with the past, and freedom from overcrowding. (Policies 3, 4, and 7)
>
> **Major New Development** - Objective 3: Moderation of major new development to complement the City pattern, the resources to be conserved, and the neighborhood environment. (Policies 1-8)
>
> **Neighborhood Environment** - Objective 4: Improvement of the neighborhood environment to increase personal safety, comfort, pride and opportunity. (Policies 1-4, and 8-14)

Applicable objectives and policies in the Recreation and Open Space Element are included as follows.

Shoreline - Objective 3: Provide continuous public open space along the shoreline unless public access clearly conflicts with maritime uses or other uses requiring a waterfront location. (Policies 1-5)

Policy 1: Assure that new development adjacent to the shoreline capitalizes on its unique waterfront location, considers shoreline land use provisions, improves visual and physical access to the water, and conforms with urban design policies.

Policy 2: Maintain and improve the quality of existing shoreline open space.

Policy 3: Create a trail around the perimeter of the City which links open space along the shoreline and provides for maximum waterfront access.

Policy 4: Create a visually and physically accessible urban waterfront along the Embarcadero corridor between Fisherman's Wharf and China Basin.

Policy 5: Provide new public open spaces along the shoreline.

H. BIOLOGICAL RESOURCES

The majority of the Project Area was formerly part of San Francisco Bay. Early survey maps for the mid-1800's show the shoreline in this area inland of the project boundary.[1] (See Section IV.I, Environmental Setting, Geology, Soils and Seismicity, pp. 250-253, for a discussion of fill activities.) Extensive filling took place in the late 1800's, which greatly reduced the marshland and Bay habitat. The remaining habitat of the Project Area is described below. The discussion is based on the 1995 California Natural Diversity Database, informal consultation with resource agency representatives,[2] and a general reconnaissance of the Project Area in 1994 and subsequent site visits.

VEGETATION

The former marsh and bayland plant community of the Project Area has been almost completely altered by filling and industrial development. With the exception of existing wetlands at Seawall Lot 352 (north of Pier 94) and Pier 98, terrestrial vegetation is restricted to weeds on vacant sites or the landscaped areas (ornamental plantings) associated with existing land uses. No federal- or State-listed rare or endangered plant species are known to exist within the Project Area.[3]

Limited marsh and marine vegetation, which provides habitat for wildlife, is found along those sections of the shoreline that have not been covered by pilings, piers, rubble, bridge supports or other structures. Common pickleweed (Salicornia virginica) forms sparse, intermittent colonies along the banks in areas such as Mission Creek Channel, Warm Water Cove, and Islais Creek at the mean high tide level in an intermittent, narrow band, varying in width from 0.5 to 1.5 meters. This species, which is the dominant plant of San Francisco Bay marshes, is adapted to tidal inundations but intolerant of continuous submergence. Marine plant communities occur on the rocks and pilings throughout the Project Area. There are few remaining areas of contiguous marsh in the Project Area. Pier 98 is somewhat degraded but does support wetland habitat. The site is a spit of land that was formerly a landfill that had been topped off with gravel but has never been "closed" though filling ceased in 1977. On the south side of the spit there is a pond and two small areas of marsh (approximately two acres). Plants in the marsh area are primarily pickleweed (Salicornia virginica) in the low areas near the pond and where tidal inundation is a common occurrence and on the higher spots salt marsh rosemary (Limonium californicum) and marsh gumplant (Grindelia stricta var. angustifolia). In 1989, the U.S. Army Corps of Engineers (COE) delineated 9.5 acres of this site as subject to COE jurisdiction. There are also approximately five acres of opportunistic wetlands surrounding a landslide area on the eastern edge of Seawall Lot 352. This wetland is below the mean high water line (MHW) and includes cordgrass and pickleweed.

WILDLIFE

The open waters of San Francisco Bay provide habitat for large numbers of birds that migrate along the Pacific Flyway. The birds use offshore bay waters for resting, feeding and wintering areas. Some birds use inshore tidal creeks, channels and sheltered areas around piers. The urban character of the Project Area and lack of terrestrial vegetation for food and cover limit most of the Project Area's habitat value for wildlife.

The waterfront is used by water and shore birds, such as ducks, gulls, terns, pelicans, loons, grebes, cormorants, herons, and egrets. Appendix G lists common bird species that have been sighted or would likely occur in the Project Area. Many of the species listed are migratory and use the area only in transit. The number of year-long resident species is not known, but based on residents in other urban settings, is likely limited to pigeons (Columba livia), English sparrows (Lesser domesticus), and starlings (Sturnus vulgaris). The lack of suitable vegetation for cover and absence of trees render the Project Area unlikely for any breeding use by these species.

The California brown pelican (Pelecanus occidentalis) and the American peregrine falcon (Falco peregrinus anatum) are the only rare or endangered bird species that occur along the San Francisco shoreline. Both species are officially listed as Endangered by the U.S. Fish and Wildlife Service and by the State of California.[4,5] Pelicans are regular summer migrants to San Francisco Bay, and are commonly seen diving for fish and perching on bayside pilings. After a severe decline in the early 1970's, caused by reproductive failures related to pesticides, their numbers are now steadily increasing. The peregrine falcon has been reintroduced from captive breeding stock and has recently nested on the Bay Bridge. The double crested cormorant (Phalacrocorax auritus), a State species of special concern, is often seen diving for fish and has been known to nest on the Bay Bridge in the vicinity of the Project Area.

The lack of suitable cover and food resources limits the terrestrial mammals to those species commonly occurring around industrialized urban areas, including the black or Norway rat (Rattus) and house mouse (mus musculus), in addition to domestic dogs and cats. Abandoned buildings could provide habitat for yuma myotis (myotis yumarensis) and Townsend's western big-eared bat (Plecotus townsendii), the latter a California Species of Special Concern. Winter roosts or nursery colonies could be present in the abandoned buildings.

There are several populations of harbor seals (Phoca vitulina richardii) in San Francisco Bay; animals that have been observed along the shoreline in the vicinity of the Project Area could belong to any one of these wide-ranging populations. A population of California sea lions (Zalophus californianus) is often found in the marina area of Pier 39. These animals have become a tourist attraction and their barking can be heard throughout the northern portion of the Project Area.

AQUATIC HABITAT

Artificial "reef" substrate -- which harbors food sources such as marine plants, burrowing clams, mussels, annelids (tube worms), and crustaceans (crabs, shrimp, isopods, etc.) -- is provided by piles, walls and dock structures.

Appendix G presents a list of common sport and commercial fishes expected to appear in the Project Area. Other species also may be recorded on an occasional or migratory basis. The Pacific herring (Clupea harengeus pallasii) fishery is one of the last remaining commercial fisheries in San Francisco Bay. The current fishery began in 1973 and specializes in herring roe (eggs) rather than the fish itself.[6] The roe is exported to Japan, where it is considered a delicacy. Consequently, commercial fishing coincides with spawning of the herring in the Bay from November to March. Peak spawning months are typically December through February.

Because of its commercial importance, Pacific herring populations and spawning success are closely monitored by the California Department of Fish and Game. In recent years, studies have indicated increased herring spawning activity along the San Francisco waterfront.[7] Marine vegetation, pier pilings, riprap and other "hard surfaces" provide the preferred substrate for herring spawning.[8]

Special status fish potentially occurring in waters adjacent to the Project Area include tidewater goby (Eucyclogobius newberryi), federally endangered and State species of concern; winter run Chinook salmon (ancorhynchus tshawytscha), federally and State endangered; green sturgeon (Acipenser medirostris), federally recommended as endangered; and longfin smelt (Spirinichus thalechthys), State species of concern.[9]

NOTES - Biological Resources

1 Nichols, D.R., and N.A. Wright, *Preliminary Map of Historic Margins of Marshland,* San Francisco Bay. Open-File Report 71-0216, U.S. Geological Survey, 1971, 10 pages

[2] Resource agency representatives consulted include Dante Maragni, Habitat Restoration Specialist with the National Marine Fisheries Service, Bob Pine, Biologist with the United States Fish and Wildlife Service, and Bob Tasto, Biologist with the California Department of Fish and Game.

[3] California Natural Diversity Data Base, July 1995.

[4] U.S. Fish and Wildlife Service, U.S. Department of the Interior, "Endangered and Threatened Wildlife and Plants," 50 CFR 17.11 and 17.12, 1986.

[5] Laudenslayer, W.F., Jr., and W.E. Grenfell, Jr., "A list of Amphibians, Reptiles, Birds, and Mammals of California," *Outdoor California*, 44(1):5-14, 1983.

[6] Spratt, Jerome D., "Status of the Pacific Herring, Clupea harengus pallasii, Resource in California, 1972 to 1980," California Department of Fish and Game, Fish Bulletin, (171): 1-107, 1981.

[7] Reilly, Paul N., and Thomas O. Moore, "Pacific Herring, Clupea harengus pallasii, Studies in San Francisco Bay and the Gulf of the Farallones, June 1984 to March 1985," California Department of Fish and Game, Marine Resources Administration Report 85-4: 1-73, 1985.

[8] Eldridge, M.B., and W.M. Kail, "San Francisco Bay Areas' Herring Resource -- A Colorful Past and a Controversial Future," U.S. National Marine Fisheries Service. Marine Fish Review 35(11): 25-31, 1973.

[9] Pine, Bob, Biologist, U.S. Fish and Wildlife Service, personal communication, September 15, 1995; Maragni, Dante, Habitat Restoration Specialist, National Marine Fisheries Service, personal communication, September 15, 1995

I. GEOLOGY, SOILS AND SEISMICITY

DATA REVIEW AND SITE RECONNAISSANCE

The Project Area includes an area along the fringe of San Francisco Bay that has a varied history of use and, consequently, alteration of the geologic environment. Only anecdotal documentation of the geologic materials in the Project Area exists prior to the 1906 Great San Francisco Earthquake and Fire, and little detailed geologic data are available until the 1950's in this area. This report uses available information and data collected from varied published sources. No soil testing or field exploration was performed in preparing this report.

EXISTING SURFACE FEATURES AND TOPOGRAPHY

The Project Area is located in low-lying areas fringing San Francisco Bay. Land elevations range from sea level to approximately 12 feet above mean sea level (MSL).[1] The topography of the land is largely flat or very gently sloping. There are places where steeper slopes impinge on the inland edge of the Project Area, including the eastern flank of Telegraph Hill near Seawall Lots 314-318, the southeastern edge of Rincon Hill near Seawall Lot 330, and the northeastern edge of Hunters Point adjacent to Port property at India Basin. Because the Port properties are flat and largely developed, there are no topographic features of note within the Project Area. The principal features are inlets along the shoreline including (north to south) China Basin, Warm Water Cove, Islais Creek and India Basin.

The offshore bathymetry (underwater topography) of the Bay is moderately deep to shallow adjacent to the shoreline. At the bayward ends of the piers, the depth to bottom ranges from 5 to about 44 feet below mean lower low water (Table 17).[2] The Bay bottom drops off relatively steeply to 60 feet just beyond the outer ends of most of the piers of the northern and central waterfront areas, but the Bay is shallower and drops off more gradually in the southern waterfront area. The shallowest parts of the Port properties within the Bay are at India Basin (3- to 7-foot depths) and along the southern and eastern edges of Piers 94-96. Mission Rock Terminal (Pier 50) is constructed over small knobs of rock that rise above the water line (the features are no longer visible). Dredging is required to maintain certain design depths of approaches to and alongside piers that receive large vessels with greater draughts. The approach depth at North Point is 10 feet and the alongside depth is 4 feet. At Mission Rock Terminal, the alongside depth is 15 feet. In the Central Basin the approach depth is 15 feet and the alongside

TABLE 17: WATER DEPTH AT SELECTED LOCATIONS ALONG THE PORT OF SAN FRANCISCO WATERFRONT

Site	Depth and Location (Depths Reported in Feet Below Mean Lower Low Water)		
Fisherman's Wharf			
Pier 45	22-36 west side	14-36 east side	44 end
Pier 43 1/2	13-18 west side	13-18 east side	20 end
Northeast Waterfront			
Pier 33	17-19 west side	18-14 east side	20-35 end
Pier 29	23-29 northwest side	NA	50-55 end
Pier 27	NA	34-40 east side	50-55 end
Pier 23	17-36 northwest side	17-18 southeast side	36 end
Pier 9	23-36 northwest side	17-26 southeast side	37 end
Ferry Building			
Pier 3	18-36 northwest side	19-36 southeast side	38 end
Ferry Plaza	9-21 northeast side	9-23 southeast side	36 end
Promenade	6-20 northeast side	NA	NA
South Beach/China Basin			
Pier 26	23 north side	37 south side	60 end
Pier 30	32-34 north side	NA	60 end
Pier 32	NA	24-40 south side	40-50 end
China Basin	3-18 west of 4th St.	11-21 east of 4th St. to U.S. bulkhead	7-25 mouth
Mission Rock Terminal (Pier 50)	18-51 north side	5-40 south side	47-57 end
Pier 54	22 north side	24 south side	26 end
Central Basin	3-16 west side	20-26 north central part	33-40 mouth
Southern Waterfront			
Pier 70/Potrero Pt.	2-12 south side	NA	12-36 end
Islais Creek Channel	21-40 west of 3rd St.	12-40 west of 3rd St. to U.S. Bulkhead	12-36 mouth
Pier 94	30-40 northeast side	NA	NA
Pier 98	1-10 north side	2-18 south side	18-23 end
India Basin	2-15 eastern part	1-18 central part	12-36 mouth

NA = Not Applicable

SOURCE: Environmental Science Associates, 1995, using data from National Oceanic and Atmospheric Administration: Nautical Chart San Francisco Bay, Candlestick Point to Angel Island, Sheet No. 18650, Scale 1:20,000, August 1985; Hydrogeographic Survey, January 1991, by Towill, Inc., Sheets 1-10, 1"-100', ft. below MLLW depth ranges from 7 to 22 feet. At Islais Creek the approach depth is 30 feet and the alongside depth is 2 feet.[2,3]

Some of the depths reported here may have changed since the publication of the nautical chart from which the data were taken. In addition, maintenance dredging alters some depths on a regular basis. The Port maintains design dredge depths of between 30 and 38 feet at certain maritime facilities, including Piers 45, 35, 27-29, 30-32, 38, 48, 50, 70, 80 and 94-96.

Dredging, by law, must be permitted by the U.S. Army Corps of Engineers. New work may include detailed environmental review to identify impacts, alternatives and mitigation measures to support the Corps' decision. All dredging must include a determination of dredge disposal and the associated impacts of the chosen site. Specific requirements of the Corps would be stated at the time of environmental review and permitting.

GEOLOGIC MATERIALS

The geologic materials comprising the Project Area are of five general types: (1) fill materials, (2) Younger Bay Mud, (3) sand and clay formations, (4) dune sand, and (5) bedrock. These are described below.

Fill

Most of the Project Area sites are fill placed over Bay Mud and other materials.[4,5] Fill materials consist of heterogeneous material deposited during historic times to create "made land." There is considerable variation in the type, depth, age and nature of fill on Project Area sites. The fills typically were placed over Bay Muds, sand and other sediments that rest at depth on bedrock. The artificial fills vary substantially in character, depending on the source of the fill.

Much of the fill consists of clay to cobble-sized materials including former dune sand that was excavated during the building of San Francisco and hauled to the waterfront and dumped on top of the Bay Mud or other surface material. The fill also consists of rubble (concrete, bricks and wood) from building demolition, notably after the 1906 Earthquake and Fire. It also consists of assorted organic and non organic debris, refuse, some hazardous substances, and other materials. In some areas of the waterfront, the fill was placed around and over abandoned ships. The fill is generally less than 30 feet thick, except at the sea wall fills and adjacent areas, which are up to about 45 feet thick.[6] Because the fill material was largely placed before the 1950's, there was little control or engineering of the fill. For this reason, the material is subject to highly variable compaction. As noted, the fills vary in age by location, and, consequently, the overall degree of settlement and relative consolidation are also quite variable. In much of the Project Area where fill is present, the lower-lying fill material is also saturated and subject to liquefaction during earthquakes.[7]

Historic Shoreline Development

The great majority of the Port has been developed on fill that has been placed over the natural Bay Mud that formed almost the entire eastern shoreline of San Francisco. A detailed description of the filling of the eastern shoreline of San Francisco is presented in the report by R. Olmstead, N. Olmstead and A. Pastron, 1977, *San Francisco Waterfront: Report on Historical Cultural Resources for the North Shore and Channel Outfalls Consolidation Projects,* prepared for the San Francisco Wastewater Management Program, City of San Francisco, California. Summary information is presented in the following paragraphs.

The Original Shoreline. In the early 1850's, all of the shoreline was located landward of the existing shoreline (south of Fisherman's Wharf and westerly of the remainder of the Project Area), and the current Project Area sites mostly were either inundated or low areas of mud and sand exposed to tidal flux. The shoreline also was much more irregular. Figure 47 in Section IV.O., Environmental Setting, Archaeological Resources, p. 339, shows the original 1852 shoreline as it relates to the modern City land boundary.

The current Fisherman's Wharf area was part of the Bay to south of the current alignment of Beach Street.[8] The Northeast Waterfront between Pier 35 and Pier 17 also was within the Bay with the shoreline set back to just west of The Embarcadero and crowded close to the eastern foot slopes of Telegraph Hill.

A broad shallow tidal bay was located from the approximate location of the current Broadway and The Embarcadero on the north to Spear and Folsom Streets on the south, and extended westerly to the approximate location of Fremont Street (the head of the bay was the site of the present Transbay Terminal).[9] This inlet ranged in depth from 1 to 11 feet deep and was comprised of soft mud and sands. The bay included all the current Project Area sites in this area from Pier 7 to Pier 24, including the Ferry Building. The edges of the bay were largely comprised of drifted sand and sand dunes. The southern edge of the bay was Rincon Point, a bedrock hill that formed a prominent 40-foot-high promontory of the Bay (located currently at the intersection of Harrison Street and Spear Street).

From Rincon Point south, the shoreline lay westerly of the current Embarcadero, and in the area of the current China Basin (Mission Bay Planning Area) a broad shallow bay formed a tidal area with fringing marshlands called Mission Bay.[8,10] Mission Rocks were two low bedrock protrusions (an extension of a narrow peninsula named Point of Rocks) above the waters of the eastern part of Mission Bay. The southerly edge of the bay was located between Sixteenth Street and Mariposa Street westerly of the current Central Basin. A low-lying area formed the shoreline close to the current location of Warm Water Cove.[8] The southern edge was a point of land originally named Point San Quentin, and later renamed Potrero Point.[10] This peninsula was a bedrock extension of the Potrero Hills that separated the Mission Bay and Islais Creek bays. The original northern shoreline of Potrero Point was located between the current 20th and 21st Streets.[10] Potrero Point was a fairly high and steep rock promontory that rose abruptly from the Bay.

The entire area of the current North Container Terminal, Islais Creek Channel and Pier 94-96 were part of a large bay located at the mouth of Islais Creek. The westerly part of the bay was marshlands and tidal flats.[8,10] Islais Creek Cove was a low-lying area within the bay. It was shallow, with salt marshes at the head of the bay at the mouth of the creek. At India Basin, the shoreline was located a little to the west and south of the current shore.

Fill Placement to Create the Present Shoreline. The filling of the shoreline to its present configuration began in the 1840's and continued to as recently as 1977 (for the creation of Pier 98). As San Francisco grew, excess grading material was dumped into the Bay. Attempts to create a stable shoreline were made by constructing local sea walls of rubble. As development of the City occurred, the shoreline gradually advanced Bayward, where fills could be easily dumped on top of the shallow bays, tidal flats and marshes. In 1863, a State Harbor Commission was created to control port activities. The first project of the Commission was the construction of a sea wall to stabilize the shoreline of the waterfront. The old sea wall (constructed 1867 -1869) is located in the alignment of The Embarcadero. By 1880, the sea wall extended from Fisherman's Wharf to China Basin (then Mission Bay).[10] The old sea wall was constructed by excavating an approximately 100-foot-wide trench to a depth of about 20 to 25 feet in the soft Bay Mud; rock fill was placed in and above the trench to form an embankment.[6] Fill was placed behind the sea wall to create the current landmass. Large settlements of the old sea wall occurred because of consolidation and displacement of the underlying Bay Mud, and eventually the old sea wall was covered over with fill. At Pier 45, fill was placed in front of the sea wall, so that the pier itself is constructed over the fill.

A second (so-called "new" or "great") sea wall was constructed from Taylor Street to Channel Street along The Embarcadero between 1878 and 1924. Construction was similar to that used in the old sea wall, but the slopes were gentler (4:1), and in places a pile-supported concrete wall was constructed within the embankment.[6] After the 1906 earthquake, new sections of sea wall were constructed west of Taylor Street as part of the construction of Fisherman's Wharf, Pier 45, and the breakwater near the foot of Hyde Street.[6]

The filling of Mission Bay began in the 1850's, and progressed bayward, entering the area currently under Port jurisdiction in the mid-1860's.[10] The Mission Bay area was the official City dump in the late 1800's. It was further filled with rubble from the 1906 Earthquake and Fire.[11] A sea wall was constructed in the early 1900's from China Basin to the Central Basin.[6] This sea wall was constructed of igneous basalt rock as the core, on average measuring 40 to 50 feet deep and 60 feet wide, with a rip rap of broken stones placed irregularly or loosely to protect the core from wave action.[6] Similarly, the Mission Rocks were surrounded by rock fill, enlarging the surrounding land area by four acres.[6] Further filling connected the island to the land, creating the core of the Mission Rock Dock, which was constructed over it (currently named Mission Rock Terminal or Pier 50). This fill was created in the late 1940's by installation of an encompassing concrete bulkhead that was filled from behind with dredged sand and rock.[10] The fill extended the Terminal pier 880 feet on the north side and 1,103 feet on the south side.

The shallow tidelands surrounding Potrero Point (from current Mariposa to Twenty-fourth Streets) were filled between the 1860's and the 1940's, so that the Point is no longer recognizable. Much of the fill was derived by cutting back the surface of Potrero Point; in places, up to 80 feet of soil and rock were excavated and removed to fill the nearby shore as well as Mission Bay.[10] It is currently covered by Piers 68-70.

While some fill of Islais Creek Cove (currently Twenty-fourth Street to India Basin) was placed as early as 1915 (on the south side of the channel), most of it was filled after the 1920's.[10] As part of the Islais Creek Reclamation District, a 2,090-foot rock sea wall was created along the north side of Islais Creek in 1925 and dredged material was placed behind it for fill. The fill was completed in 1936, extending the channel of Islais Creek westward. In the 1940's and early

1950's, refuse contributed heavily to part of the fill material, as the site was a City dump.[10] In the late 1950's, Pier 80 was created by the placement of 4.3 million cubic yards of fill to create an additional 46 acres of new land and to bring 22 acres of the old fill up to grade.[10] To lay the fill, trenches were dug to a depth of 135 feet around the bay perimeter to contain the sand dike that contains the Bay Mud and new fill. The excavated material was dumped at India Basin. The dike was constructed of a bottom layer of bonding rock in a two-foot layer. The bottom layer was covered by sand that was secured in place by hard materials, and finally a two-foot thickness of rip rap was placed over the rock.[10]

The area south of Islais Creek was filled beginning in 1915, with an expansion of fill in 1919 and in the late 1920's and early 1930's.[10] The site of the PG&E Hunters Point Station at India Basin was constructed in 1929 using excavated rock (serpentine) to form two dikes extending into the Bay to the government bulkhead line and filling the area. In 1962, filling was renewed when a 6,000-foot rock-filled dike sea wall (known as the Boblitt Debris Dike) was constructed between the Islais Creek Channel on the north and India Street on the south and from Cargo Way on the west/southwest to the Bay waterfront line on the east. The dike was constructed by first placing 1.7 million yards of debris to create a 30-foot-high dike with a base width of 180 feet. Then the embankment was widened to a base width of 300 feet.[10] Fill was placed behind the dike including rubbish and dredged Bay Mud. One hundred fifty acres of land were created by this fill.

The last fill of the waterfront was that for creation of Pier 98, beginning in 1970. Only a portion of the acreage was completed, and the area today forms an approximately 25-acre jetty-like mass protruding into India Basin.

Almost none of the fill placed prior to the mid-20th century in any part of the waterfront was created with any engineering control. Such fills encompass most of the Project Area. Only the most recent fills in the Southern Waterfront subarea were placed with controlled engineering.

As fills were placed, the channels of earlier existing creeks (Mission Creek and Islais Creek were the two main watercourses) became blocked or constricted. Subsequent straightening by placement of fill and periodic dredging has created the current forms of these channels, China Basin and Islais Creek Channel.

Younger Bay Mud

Almost all of the Port lands are underlain by Bay Mud. Bay Mud is present at the piers at the surface of the Bay bottom (so-called Mud Line), and at inland sites behind the sea wall, Bay Mud occurs at depth below fill.[4] The Bay Mud is a natural estuarine deposit present throughout most of the Bay. The Bay Mud was deposited in the Quaternary in the San Francisco Bay.[12] Bay Mud consists of generally uniform gray, soft, saturated clay and silt with organic material and some sand. Lenses of sand, silt and organic material (peat) are present within the mud.[5]

The Younger Bay Mud is commonly divided into an upper "soft" member and an underlying semi-consolidated member. The Younger Bay Mud is present near the ground surface (under the fill cover) and forms the Bay bottom beyond the sea wall. It is saturated, soft and compressible when loads (such as buildings) are placed on it. Loads placed on this material cause the soft mud to compress and settle. Loads placed on the mud also may result in plastic deformation and lateral movement, sometimes accompanied by upthrusting in adjacent areas (creation of so-called "mud waves") or underwater landsliding. The mud has a low shear strength (resistance to downslope movement of rock and soil). For these reasons, Younger Bay Mud is not considered suitable material for bearing foundations of anything but very light structures and is usually not relied upon to support vertical loads.[4,5] There are numerous examples of buildings and other structures in the waterfront that have sunk below the original grade at the street or have tilted out of plumb because of settlement of the Younger Bay Mud on which they were founded.

Sand and Clay Formations

The Younger Bay Mud overlies geologic sediments of sand and clay which have been variously classified by different geologists. Part of these formations are called the Merritt Sand (or sometimes the Colma Sand, Posey Formation or Bay Side Sand), part are called Old Bay Clay (or sometimes the Older Bay Mud), and part are called the San Antonio Formation.

In most areas of the Port, such as Fisherman's Wharf, the Ferry Building and Islais Creek, the Younger Bay Mud rests on a layer of the Merritt Sand.[4,5] At Fisherman's Wharf, the Ferry Building and Islais Creek this sand layer is 40 feet, 20 feet, and 50 feet thick, respectively. The sand varies in thickness and interfingers with Older Bay Mud. The sand deposits are of Quaternary age. The upper part of the sand deposits is commonly grouped with the Merritt Sand Formation. The Merritt Sands consist of fine- to medium-grained sand that locally contains clay beds that are six inches to five feet thick. Bedding (dividing layers) is well developed in the

Merritt Formation (both horizontal and inclined bedding is apparent).[4] Because the Merritt Sand is relatively firm and compacted, it has a moderate to high shearing strength, and therefore is sometimes used for bearing caissons (structures used in underwater work) and piles driven through the overlying Bay Mud.[4]

Old Bay Clay is a firm, dark greenish-gray silty clay with some sand and fine gravel. The Old Bay Clay is more compacted (stiffer) than the overlying Younger Bay Mud; geologists describe it as "overconsolidated," indicating that the degree of consolidation is greater than would be expected from the weight of the sediments that overlie the clay today.[4,5] Additionally, the lower Old Bay Clay has less moisture. The overconsolidation and lower moisture content provide good conditions for supporting piles founded in the lower portion of the Old Bay Clay, and those deposits are suitable for bearing all but heavy concentrated loads.[5] Nonetheless, it is also compressible. Old Bay Clay can only locally support piles where it is relatively stiff. Site-specific testing is required to determine whether Old Bay Clay has suitable engineering characteristics to support piles and caissons.

In some areas, the Old Bay Clay and/or Merritt Sand Formation rests on top of a thick, dense layer of sand and gravel called the San Antonio Formation, which, in turn rests on bedrock. In other areas, these deep-lying sand formations are absent and the deepest formation is the Old Bay Clay, which rests directly on bedrock.

Dune Sand

Much of the City of San Francisco is constructed on Quaternary-age dune sand, that is, wind-deposited sand and other fine-sized material generally with a buff to gray color. The Project Area sites are located at the eastern fringe of the dune sand area. Only small parts of the Project Area are located in areas underlain by dune sand (primarily in the Fisherman's Wharf subarea). Where the dune sand is saturated, it may be subject to liquefaction. Where the dune sand is not saturated, it provides relatively good bearing characteristics for lightweight structures.[4]

Bedrock

Bedrock is present at depth below Bay Mud, fill and sand and clay formations; it occurs at the surface in only a few small parts of the Project Area. Most of the bedrock is concealed by overlying sediments and fill, and, therefore, its composition is not known. It is believed that most of the bedrock is the same Franciscan Assemblage rock that crops out on the land adjacent to the Project Area and at Mission Rock.

The Franciscan Formation varies in composition locally, consisting in some areas predominantly of graywacke sandstone in thick beds, and elsewhere of shale mixed with thin-bedded sandstones, hard chert mixed with softer layers of shale, or greenstone (green- to brown-colored basalt rocks that vary locally from hard to soft, depending on their history of formation and subsequent shearing).[13] In some areas, the rocks are highly mixed and variable, forming a type of rock termed "melange." In some areas it was deeply weathered before being buried under sand, Bay Mud and alluvium. In places, the Franciscan bedrock was crushed and sheared by geologic processes. The sheared materials do not provide as good bearing characteristics for structures as where the rocks were not altered by these processes.[13] In some areas, intrusive serpentine rocks are present within the bedrock. The Franciscan rocks date to the Jurassic-Cretaceous.[14]

The depth to bedrock is highly variable, ranging from 0 to over 250 feet deep below the surface.[15] The depth to the Franciscan bedrock varies substantially locally, often reflecting the topography of former hills that have sunk and been buried by younger unconsolidated sands, muds and fills. It is not, therefore, a flat solid surface at depth, but rather a steeply sloping irregular surface which has been buried. For example, at the northeast corner of the China Basin Building (Fourth Street at Berry Street), the depth to bedrock is about 50 feet, while at about 1,000 horizontal feet to the southeast on Fourth Street, the depth to bedrock is over 200 feet, probably reflecting the former valley of ancient Mission Creek that was later filled with sands and Bay Mud.[5] The only area of substantial size with bedrock exposure in the Port lands is located near Potrero Point, where the remnant of a former bedrock hill that was heavily excavated is present. The rock in that area is termed serpentine. The rock is highly sheared, and hard rounded knobs are typically present in a mass of fractured and crumbly weak material.[4]

REPRESENTATIVE GEOLOGIC PROFILES

The profile of geologic materials underlying the fills varies by geographic location. The following provides selected examples of the geologic profiles within the Project Area.

Fisherman's Wharf Subarea

In this area generally about a 15- to 20-foot thickness of artificial fills was placed over Quaternary shoal deposits near the waterfront and over dune sand on the landward side of the original shoreline. On the bayward side, the fills were placed over Quaternary Bay Mud. The dune sand as well as the Younger Bay Mud and Old Bay Clay rest on top of Franciscan Assemblage bedrock, which in this area likely comprises sandstone and shale.[4,6] The depth to bedrock is on the order of 50 to over 100 feet.[15]

At Pier 45, the geologic column consists of about 30 to 37 feet of fill (mostly loose to medium dense sand to silty sand) resting on dense silty and clayey sand and soft to very stiff sandy silty clays that extend to a depth of at least 76.5 feet.[16] The sequence of geologic materials has been identified (top to bottom) as fill, Younger Bay Mud, Bay Side Sand, Older Bay Mud and Franciscan Bedrock. Bedrock is estimated to be at a depth of about 125 feet at Pier 45.[17]

Northeast Waterfront Subarea

Approximately 40 to 60 feet of artificial fill are located over Franciscan shale and thin-bedded sandstone bedrock.[4] The depth to bedrock drops off rapidly from the waterfront. At The Embarcadero the depth to bedrock is about 100 feet and at the bayward end of Pier 33 the depth to bedrock is over 200 feet.[13]

Ferry Building Subarea - Embarcadero at the Ferry Building

The Ferry Building is located on the Bayward side of the sea wall. Therefore, artificial fill is absent at the site. About 90 - 120 feet of Younger Bay Mud underlies the building.[18] Within the Younger Bay Mud there is a 20- to 45-foot-thick layer of loose to medium dense sand lens. A 15- to 25-foot-thick layer of dense to very dense sand and clayey sand (Posey Formation) underlies the Younger Bay Mud. Below the Posey Formation is an 80- to 100-foot-thick layer of stiff clay (Old Bay Clay), which, in turn, is underlain by a thick layer of sand and gravel (the San Antonio Formation). The latter is believed to extend to Franciscan Formation shale bedrock, which is encountered at Elevation -240 feet.[18]

On the landward side of the sea wall, the same sequence of geologic materials is present as that under the Ferry Building, however, approximately 30 feet of artificial fill material overlies the Younger Bay Mud.[18]

South Beach/China Basin Subarea - At The North Side of the Third Street Bridge

A 45-foot depth of fill is located over 57 feet of Quaternary-age sand and clay. The upper part of the sand layer probably is Merritt Formation.[4] Depth to bedrock is about 100 feet.[13]

Southern Waterfront Subarea - North Container Terminal

On the north side of the Terminal, 24 feet of fill rest over 35 feet of Bay Mud. The mud rests over sand.[4] On the east side of the Terminal, the fill is about 54 feet deep and the Bay Mud is 24 feet deep, resting on sand.[4] Depth to bedrock is about 100 feet.[13]

SEISMICITY

The entire City of San Francisco is located in a region with a high degree of seismic hazard. There are approximately 30 earthquake faults located in the region that are considered capable of generating damaging earthquakes.[19] There are no known capable faults located within San Francisco.[20,21] It is possible that concealed faults may be located in San Francisco Bay, such as that recently identified near San Francisco International Airport. At present no capable faults are known to be located in the Project Area or the immediate vicinity.

Earthquake hazards for the Project Area are derived from earthquakes generated on faults in the region. As was evidenced in the 1989 Loma Prieta Earthquake (which had an epicenter over 60 miles from San Francisco), even distant faults can generate life-threatening and severely damaging earthquakes in the Project Area. Of the many faults that could generate earthquakes, the most severe hazards to the Project Area probably are posed by the San Andreas Fault, Hayward Fault, Healdsburg-Rodgers Creek Fault, Calaveras Fault and San Gregorio Fault. Each of these faults displays evidence of historic earthquake activity and each has the potential to generate large-magnitude earthquakes during the life of the Waterfront Land Use Plan (WLUP). While individual earthquakes cannot be predicted for any fault system, seismologists can estimate the probability of future earthquakes based on the historic earthquake records and geologic evidence indicating the relative recurrence of seismic events. Some of the key faults and their maximum probable earthquake potential are presented in Table 18. The Working Group on Earthquake Probabilities estimates that there is a 67 percent probability of a major earthquake in the Bay Area by the year 2020 generated by at least one of the capable faults in the region.[22] Some seismologists believe that probability of a major earthquake is substantially greater than the Working Group's estimate.[23] Although statistical probabilities of earthquakes

TABLE 18: MAJOR SAN FRANCISCO BAY AREA EARTHQUAKE FAULTS AND THEIR MAXIMUM PROBABLE EARTHQUAKE MAGNITUDES

Fault Name	Age	Slip Rate	MHE	MPE	Nearest Distance (from Ferry Building)
San Andreas - North Coast segment	Historic	15 - 23 mm/year	8.25	7.1	9 miles
San Andreas - San Francisco Peninsula segment	Historic	19 mm/year	8.25	7.1	10 miles
San Andreas - Santa Cruz Mountains segment	Historic	19 mm/year	7.1	7.1	34 miles
Northern Hayward	Historic	9 -15 mm/year	6.5 - 7.5	7.1	9.5 miles
Southern Hayward	Historic	9 -15 mm/year	6.5 - 7.5	7.1	15 miles
Entire Hayward	Historic	9 -15 mm/year	6.5 - 7.5	7.3	9.5 miles
Calaveras	Historic	13 - 17 mm/year	6.0	6.9	25 miles
Healdsburg - Rodgers Creek	Historic	6 - 10 mm/year	5.7	7.1	25 miles
Green Valley	Holocene	4 mm/year	2 - 3	7.1	27 miles
Concord	Historic	4 mm/year	5.4	7.1	24 miles
Antioch	Historic	NA	6.0	6.5	35.5 miles
Greenville	Historic	NA	5.9	7.1	37.5 miles
San Gregorio (Seal Cove)	Historic	NA	6.4	7.1	14 miles

Age = period of recorded or most recent geologic evidence of earthquake displacement on a fault.

Slip Rate = data indicating the amount of surface displacement along the fault over a unit period; the higher the slip rate, the shorter the expected time to the next earthquake.

MHE = Maximum Historic Earthquake Richter Magnitude, based on measurements or inferred from geologic and observed evidence of earthquake effects.

MPE = Maximum Probable Earthquake Magnitude, an estimate of the largest earthquake that is judged by geologic studies to be capable of occurring on a fault or segment of a fault for a design period. The MPE is equated here with the design earthquake scenario used by the Association of Bay Area Governments in its planning document and maps *On Shaky Ground*, 1995.

NA = Not Available

SOURCES: Working Group on California Earthquake Probabilities, 1990, *Probabilities of Large Earthquakes in the San Francisco Bay Region, California*. California Division of Mines and Geology, 1992, Anderson, J.G., 1984, *Synthesis of Seismicity and Geologic Data in California,* U.S. Geologic Survey Open File Report 84-424. Wesnousky, S.G., 1986, "Earthquakes, Quaternary Faults and Seismic Hazards in California," in *Journal of Geophysical Research*, Vol. 91, No. B12. Association of Bay Area Governments, 1995, *On Shaky Ground.*

may be argued, all evidence indicates that a major earthquake may be expected during the design life of the facilities allowed under the WLUP.

The earthquake hazards in the Project Area are especially high compared to those in most other parts of San Francisco because of the nature of the geologic materials that form the Project Area. Bay Mud and unengineered fill, and to a somewhat lesser extent alluvium, are subject to amplification of ground shaking during an earthquake. Because these geologic materials form so much of the Project Area and underlie adjacent waters, the Association of Bay Area Governments (ABAG) indicates that almost the entire Project Area is located in an area of "Extremely High" shaking amplification, the highest of eight classes of amplification.[24] Only two small areas (Mission Rock and the southwest side of India Basin) are not included in this category.

ABAG also has mapped the anticipated ground-shaking intensity under various earthquake scenarios for the entire City, including Port lands. Because of the shaking amplification characteristics of the geologic materials, under each mapped scenario, the Project Area is one of the areas of the City expected to have the most damage.[24] Using the Modified Mercalli Intensity Scale, ABAG indicates that the Project Area may be expected to be in the second-highest damage level (IX-Heavy) for a 7.3 magnitude earthquake, with slippage on the entire Hayward Fault.[25,26]

In this scenario, the closer proximity of the Project Area to the fault also enhances the potential intensity in addition to the wave amplification characteristics of the soils. Intensity IX describes such phenomena as general panic; masonry structures of Type D, including those of weak materials (such as adobe, poor mortar or workmanship, and weak horizontal resistance) destroyed; masonry structures of Type C, that is, those of ordinary workmanship and mortar and/or not reinforced or designed against horizontal forces, heavily damaged, sometimes with complete collapse; reinforced masonry buildings with good workmanship but not designed in detail to resist lateral forces (Type B) seriously damaged; general damage to foundations; frame structures if not bolted shifted off their foundations; frames racked; underground pipes broken; conspicuous cracks in the ground; and sand and mud ejected in alluvial areas.

The likelihood of the entire Hayward Fault undergoing movement in an earthquake is a possibility, but one with lower probability than movement on only a portion of that fault. In a scenario of movement for only the northern segment of the Hayward Fault, the estimated magnitude would be a 7.1 earthquake; similarly, movement of the southern segment of the Hayward Fault would generate a 7.0 event.[24] Under both these scenarios, as well as scenarios for a 7.1 earthquake on the Peninsula Segment of the San Andreas Fault, a 7.1 event on the Healdsburg-Rodgers Creek Fault, or a 7.1 event on the San Gregorio Fault, almost the entire Port lands would experience an expected intensity level of VIII (Moderate) on the Modified Mercalli Scale.[24] Under these scenarios and intensity levels expected phenomena would include: steering of vehicles affected; Type D and C Masonry damaged with partial collapse; some damage to Type B Masonry; no damage to Type A Masonry (masonry buildings of good workmanship, mortar and design, bound together using steel, concrete and other materials, and designed to resist lateral forces); twisting and falling of chimneys, factory stacks, monuments, towers and elevated tanks; frame houses moved on foundations if not bolted down; loose panels thrown out; decayed piling broken off; branches broken from trees; cracks in wet ground and on steep slopes.

Earthquakes in the magnitude range and recurrence expected within the life of the WLUP, as identified above, may generally be referred to as the maximum probable earthquake. They represent the largest earthquake that may be expected to occur over the design life of the Plan, that is, approximately the next 30 years. One or more of such earthquake magnitude events may affect the area in this same period. However, even more severe earthquakes are possible during this time period. The worst-case event is referred to as the maximum credible earthquake, that is, the largest-magnitude earthquake that may be expected based on available information and without regard to a specific recurrence interval. The California Division of Mines and Geology (DMG) estimates this to be an 8.0 magnitude earthquake, similar to the 1906 Great San Francisco Earthquake - which is believed to have been an 8.3 Richter magnitude event.[27] The likelihood of an event of this magnitude is less than that of the maximum probable earthquake because very large earthquakes occur less frequently than smaller earthquakes. The 1906 Great San Francisco Earthquake is believed to have resulted from a large movement of the San Andreas Fault with an epicenter either near Point Reyes or off the coast from Daly City. In the 1906 event, much, if not most, of the building stock within the current Project Area is believed to have been destroyed; the observations are limited because fire immediately following the earthquake destroyed most of the buildings in the area.[28] However, there was no reported damage to the sea wall.[6,28] DMG estimates that an 8.0 magnitude event on the San Andreas Fault would have a Rossi-Forel Intensity of 9 on almost all Port lands.[27,29] Virtually all lands within the Project Area were recently classified as part of a "special study area" because of amplified ground motions anticipated for conditions repeating the 1906 Great San Francisco Earthquake.[30] Even moderate earthquakes can generate damaging ground shaking. The 1989

Loma Prieta Earthquake (Richter magnitude 7.1) caused significant damage to the Embarcadero Freeway, and it was subsequently demolished. The Ferry Building was damaged (although not significantly) and some failure occurred at the Ferry Plaza, Pier 45, Piers 27-29, and Pier 94.

While ground shaking (and attendant wave amplification) constitute the primary source of earthquake-related damage in the Project Area, secondary effects of ground shaking also would account for a significant threat to structures, and, therefore, threat to life safety.[6,28] Chief among the secondary effects is liquefaction. Liquefaction was observed within the current Project Area in both the 1906 Great San Francisco Earthquake and the 1989 Loma Prieta Earthquake. In both earthquakes backfill behind the sea wall liquefied.[18] In 1989, liquefaction damaged the sea wall and some pile foundations at Pier 45 and differential settlements of up to five inches caused cracking of the slab on fill and separation from the bulkhead.[31,32] A sand boil indicating liquefaction was observed in the Northeast Waterfront subarea along The Embarcadero between Vallejo and Broadway Streets.[33] Liquefaction was also the cause of considerable building damage and loss of life in the Marina District and South of Market areas in 1989. In 1906, lateral movements of the sea wall were at most a few inches as observed at the Ferry Building; the 1989 event did not result in movement of the sea wall in that area.[18] Soil liquefaction behind the sea wall in the 1989 earthquake resulted in up to four inches of ground settlement adjacent to the Ferry Building.[18] However, there were no major failures of the sea wall nor noticeable shifting of pile supported structures along the waterfront.[18] Additionally, no earthquake-induced landsliding into the Bay was reported.[18]

Liquefaction is expected to occur throughout much of the Project Area wherever saturated fills are present.[20] The potential for liquefaction is present on virtually all lands within the Project Area.[20] Four major types of hazards in the Port area are associated with liquefaction: (1) liquefaction-induced densification of soils; (2) liquefaction-induced settlement of the soil in sands below the Bay; (3) liquefaction-induced bearing capacity failure; and (4) liquefaction-induced lateral spreading. As a result of these phenomena, liquefaction may induce a drop in the ground surface, buckling, rippling and cracking of the ground surface. Liquefaction is a significant hazard because the soil-bearing strength for foundations is lost, causing the buildings to topple or lean, and because it is sometimes a source for lateral displacement of the soils (termed lateral spreading or lurching) which drag the buildings, roads, rail lines, pipelines and other structures with it. Wherever artificial fills are underlain by compressible Bay Mud, subsidence is a potential hazard; this includes almost the entire Project Area. Liquefaction-induced soil movement may break water mains, which severely limits the ability of the Fire

Department to extinguish fires following an earthquake, as occurred in both the 1906 and 1989 earthquakes.

Ground shaking in an earthquake also may induce compaction of soils with an attendant rapid settlement of the soils. Such settlement has been observed to destroy buildings and their foundations, destroy and damage roads and rail lines, and break underground pipes. Liquefaction-induced settlements of 0.25 to 2 feet are anticipated for the Ferry Building subarea; settlements of 0.25 to 1 feet are anticipated for most of The Embarcadero to the north and south of the Ferry Building and in the Northeast Waterfront and Fisherman's Wharf subareas; and settlements of 0 to 0.5 feet are anticipated for Port lands behind The Embarcadero in the Northeast Waterfront, Fisherman's Wharf and South Beach subareas.[6] Settlements of over ten feet were recently observed after the 1995 earthquake in Kobe, Japan.[34,35] The waterfront of Kobe has some similar geologic conditions (extensive fills placed over liquefiable soils and soils subject to densification) to that of the Port of San Francisco. Most of Kobe's port facilities were destroyed or rendered inoperable by ground shaking, liquefaction, lateral spreading and settlement. Liquefaction-induced lateral displacements of 0.25 to 1 foot are anticipated for the Ferry Building subarea and The Embarcadero from China Basin to Fisherman's Wharf; lateral displacements of 0 to 0.5 foot are anticipated for Seawall Lots 321, 322, and 324 in the Northeast Waterfront; and displacements of 0 to 0.25 foot are anticipated for Port lands behind The Embarcadero in the Fisherman's Wharf, Northeast Waterfront and South Beach subareas.[6]

In general, the geologic materials comprising the Port lands have poor response characteristics to earthquake ground shaking. As noted, the deep sediment layers are subject to wave amplification, resulting in violent or very strong ground shaking. In general, artificial fill has very low stability where placed over soft Younger Bay Mud.[20] However, where fills are well compacted on a firm base, they have moderate to high stability.[20] Fills comprised of substantial saturated loose sand may liquefy. The stability of Bay Mud and the sand and clay formations varies from low to moderate.[20] Some unconsolidated sands layers or lenses in these formations are subject to liquefaction and densification.

TSUNAMI

Tsunami, which are erroneously termed "tidal waves" in popular vernacular, are a series of sea waves induced by earthquakes, volcanic eruptions and/or subsea and coastal landslides. Tsunami may have their origins close to or very distant from the point of run-up on the shore. The largest tsunami to affect the California coast in recent history occurred following the 1964 Alaska Earthquake: extensive damage occurred in Crescent City, California, and minor damage was recorded in San Francisco Bay. The narrow mouth of the Golden Gate limits the extent of tsunami incursion into the Bay, but sufficient wave energy can pass through the Golden Gate to pose a hazard to low-lying areas on the bay shore. Estimates of run-up (assuming MSL water elevation) from tsunami with a 100-year return period (i.e., expected to occur once every 100 years, on average) are from 6.2 feet at Fisherman's Wharf, decreasing to 5.5 feet in the Northeast Waterfront and Ferry Building subareas, 4.8 feet at China Basin, 4.5 feet at Warm Water Cove and to about 4.9 feet near India Basin.[36] These estimates pertain only to tsunami with an origin outside of the Golden Gate. No estimates are available for tsunami that may be generated by earthquakes within San Francisco and/or San Pablo Bays (significant tsunami would not likely be generated by landslides within the Bay, and volcanic eruption is not a hazard in the Bay Area).

PIER AND BUILDING CONDITIONS

Many structures on Port lands are supported on piles driven into the deeper mud. Because most of the piles were placed many decades ago, much settlement of the piles has already occurred. For example, the Ferry Building, a 100-year-old structure, is supported on wood piles with tips about 80 feet deep embedded in soft to medium stiff Bay Mud.[18] The pile tips are short of reaching the depth of the less compressible clayey sands of the deeper Posey Formation. The settlement has been about 15 to 21 inches to date.[37] Because of secondary consolidation of the Bay Mud, the structure continues to settle at a rate of about 0.5 inch every ten years.[18]

Most of the piers and their associated bulkheads and buildings on the landside of the waterfront are old structures. Most piers were constructed between 1906 and 1936 (see Section IV.N, Environmental Setting, Historic Architectural Resources, p. 331). It is likely that few of the buildings would meet current requirements of the San Francisco Building Code or the current edition of the Uniform Building Code with California Amendments (UBC). A complete survey of all piers and buildings within the Project Area is not available. A partial survey of the condition of the piles and decks of Piers 1, 1½, 3, 5, 24, 33, 35 and 45 was made in 1991 for the San Francisco Bay Conservation and Development Commission.[38] The pier substructures were constructed from 1908 to 1928 and were rated from poor to good condition.[38] For all the surveyed piers, both the piles and the decks were found to have no design or construction provisions to accommodate either lateral or upward vertical forces that would be generated by earthquakes. The report concluded that "... it appears more likely than not that any change of use of the surveyed pile-supported piers will involve structural work underneath piers, such as the placement of new piling, new casings on existing pilings, additional members to provide more lateral stability and similar modifications."[38] It is not known to what extent that these recommendations would apply to other piers within the Project Area. It appears that many of the piers are not designed to meet current seismic force requirements. The UBC underwent significant changes in seismic design requirements in the early 1970's and late 1980's. Few of the pier structures were constructed or reinforced after those dates and it probably may be safely assumed that any of the piers or landside buildings that were constructed before the mid-1950's likely would not meet even the code requirements of the 1970's, much less current code design for seismic loads.

The Port recognizes that some of the piers are in poor condition, notably Piers 24 and 34, which are currently condemned, and Piers 33, 31, 15-17, 26, 30-32, and 36 which are dilapidated. Some of the piers are in good shape or have been constructed relatively recently. Pier 45, although an old structure, was rated good in the 1991 survey; it has an earth fill core and concrete piles. Recent construction of reinforcement at Fisherman's Wharf and reconstruction of the piers at the Ferry Building also has improved their quality. However, these areas also have a high level of susceptibility to liquefaction because of the presence of thick layers (approximately 40 feet) of potentially liquefiable sands.

A wide range of building types and ages is present within the Project Area. The oldest structures (e.g., the Ferry Building, constructed in 1898) predate the 1906 Earthquake and Fire, and buildings from every decade thereafter are present. There is no comprehensive database on building structure, construction quality and status. Most common construction types probably are present, including low-rise wood frame, unreinforced masonry (five such buildings are present, all located at Pier 70), tilt-up low-rise concrete block, mid-rise concrete shear wall, mid-rise moment frame, steel frame, metal shed and other structure types (such as the grain elevator storage silos at Pier 90 and dry docks). There are no high-rise buildings within the Project Area.

Other major construction in or near the Project Area includes the Third Street Bridge, Fourth Street Bridge, Islais Creek Bridge, railroad lines and yards, the Pier 39 Marina and South Beach Marina.

NOTES - Geology, Soils and Seismicity

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J. HYDROLOGY AND WATER QUALITY

SURFACE WATER

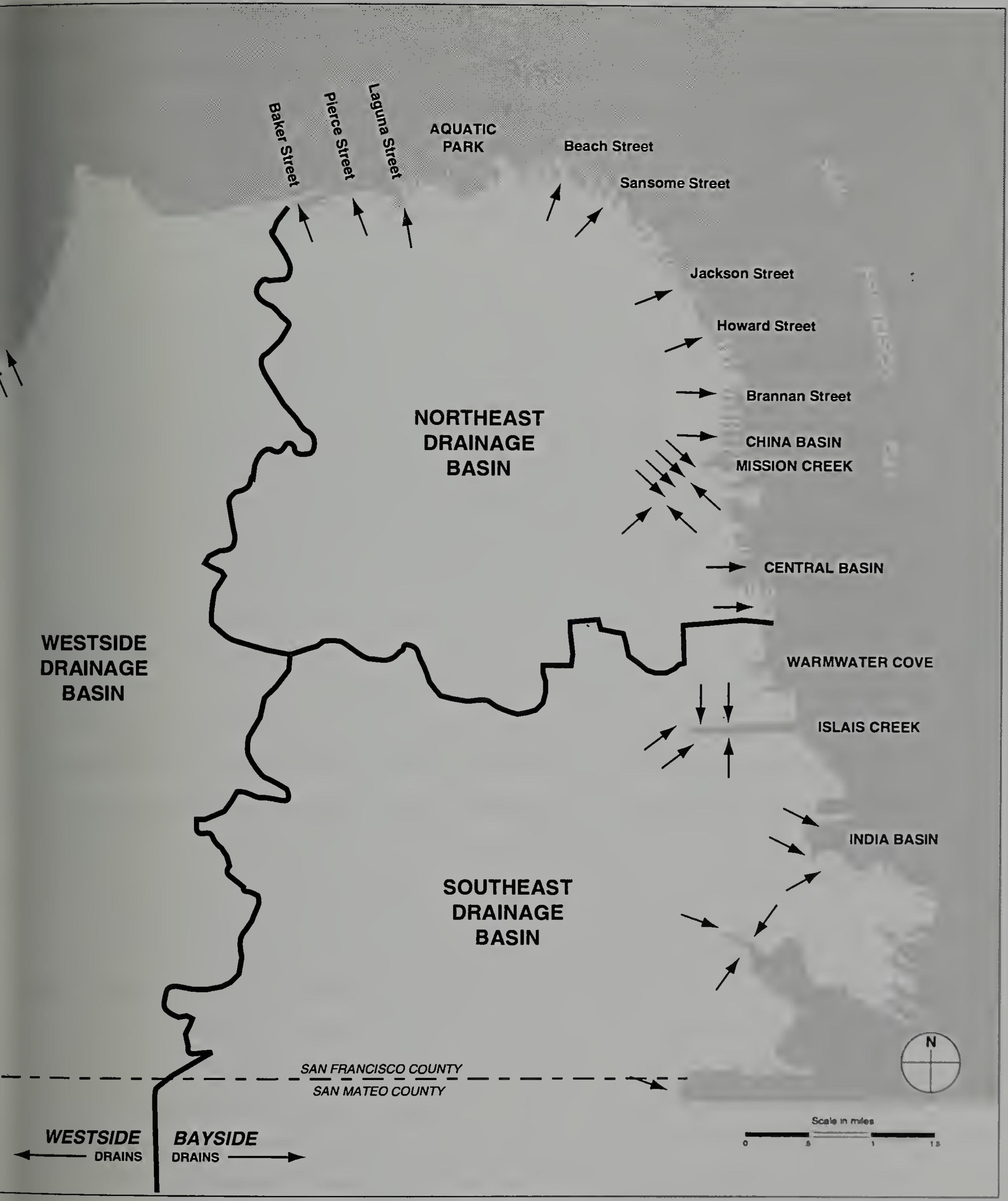
Existing Water Bodies

The Project Area is adjacent to the San Francisco Bay on the north and east. The Bay is divided into three major sections, the Northern Reach (which contains the waters from the south end of the Delta to the Richmond-San Rafael Bridge), the Central Bay (which includes the waters between the Richmond-San Rafael Bridge and the San Francisco-Oakland Bay Bridge and the waters west to the Golden Gate Bridge) and the Southern Reach (which extends south from the San Francisco-Oakland Bay Bridge to San Jose). The Central Bay and part of the Southern Reach (Upper South Bay) are adjacent to the Project Area and receive discharges of treated wastewater and of combined sewer overflow (discussed further below) from the City.

San Francisco Bay is relatively shallow and subject to high rates of sediment input, transport and redeposition. About 40 percent of the Bay is less than 6 feet deep and about 70 percent is less than 16 feet deep. The deepest area of the Bay is at the Golden Gate, with a depth of 382 feet. The Bay is subject to semi-diurnal tides, due to the proximity of the Pacific Ocean. During each ebb-flood cycle in the Bay, 10 to 30 percent or more of the volume of the Bay is replaced by new ocean water. During dry weather, the average tidal exchange is approximately 24 percent of the Bay volume. During wet weather, with freshwater flows from the Delta, the tidal ratio can exceed 80 percent. The complex currents in the Bay are produced by the interaction of the tides, freshwater inflows and the winds.[1]

The Project Area is characterized by piers extending into the Bay, as well as creeks and inlets that recede landward from the Bay. The water features in the Project Area include: Aquatic Park, China Basin, Central Basin, Warm Water Cove, India Basin, Mission Creek and Islais Creek. The waters are primarily used for navigation, boating, fishing, swimming or industrial source waters. See Figure 43 for the locations of these waterfront characteristics.

Islais Creek is a tidal inlet between Pier 80 and Pier 90. Historically, Islais Creek was a seasonal stream. Alterations to the drainage system resulted in conversion from a seasonal stream to a tidal inlet. The creek is approximately 4,800 feet long and varies in width from 325 feet at the head on the western end to 650 feet at the mouth at the eastern end. The average depth is approximately 25 feet.[1]



Combined Sewer Overflow Point

E: City and County of San Francisco,
Department of Public Works

Figure 43
Waterfront Characteristics, Drainage Basins and Overflow Points to the Bay

Mission Creek, also a tidal inlet, is located near Seventh Street and Division Street and terminates at China Basin, between Pier 46B and Pier 48. Historically, the creek and a now-filled Mission Bay extended nearly to Mission Dolores.[2] The creek is approximately 4,600 feet long and is approximately 150 feet wide through most of its length. At the outlet to China Basin, it is approximately 430 feet wide.

Drainage Patterns and Facilities

Drainage Basins and Overflows

The bayside waterfront area is divided into two natural drainage basins: the Northeast Basin and the Southeast Basin, as shown on Figure 43, p. 271. Little natural runoff reaches the Bay directly from these drainage basins other than from natural groundwater drainage, because most of San Francisco is developed and all of the developed area is sewered with a combined sewer system, except for some Port waterside properties and piers. A combined sewer system is one that carries both sanitary sewage from buildings and also, during rainy weather, rainwater runoff from streets, sidewalks and building roofs. Thus, most natural runoff in the project area is diverted to the sewer system instead of flowing directly to the Bay.

Each major drainage basin is further divided for sewerage purposes into subareas that drain to main collection sewers.[3] These collection sewers transport sewage to treatment plants, but when the treatment, transport and storage capacities are exceeded, each subarea also includes overflow points that permit excess sewer flows to be discharged directly to the Bay on the east side of the City. There are a total of 28 overflow points along the bayside waterfront. Overflows from these discharge points are regulated under the National Pollutant Discharge Elimination System (NPDES) permit issued by the Regional Water Quality Control Board.[4] The overflows at points on the north shore (to about Jackson Street) are permitted an average of four times per year under the NPDES permit. The overflow occurrences at points along the Northeast Waterfront and the South Beach/China Basin subareas (the Channel Consolidation area and the Mariposa Basin) are permitted an average of 10 overflows per year. Ten overflows per year, on average, are also permitted in much of the Southern Waterfront subarea, with one per year allowed in the areas of Hunters Point and Candlestick Point State Park.

Most of the untreated sewage overflows are discharged from transport/storage facilities recently constructed (between the mid-1970's and the present) that include weirs to prevent floatable materials in sewage flows from being discharged to the Bay. Most overflows to the Bay come from storage facilities in which much of the settleable material has settled out. Therefore most of the floatable and settleable materials are not discharged to the Bay. Because these overflows occur only during rainy weather, the raw sewage is diluted as much as 10:1 by rainwater. Thus, unlike in earlier times, present-day combined sewer overflows receive partial (physical) "treatment" within the system prior to discharge, although no biological oxidation treatment or disinfection occurs.

Stormwater runoff from the waterside of The Embarcadero, including the piers, historically drained directly to the Bay. With the implementation of the Waterfront Transportation Projects, new curb inlets have been installed on the waterside of the road to funnel runoff into the City's combined stormwater/sewer system. In addition, stub-outs (unconnected drainage pipes) have been installed through the seawalls to allow for future pier hook-ups into the City's combined stormwater/sewer system.[5] When all improvements to The Embarcadero are completed, drainage from over 50 percent of the Port's roadways will be incorporated into the City's stormwater/sewer system.[6]

Treatment and Outfall Facilities

The combined sewer system in the City carries both municipal and industrial wastewater and intercepted storm runoff in the same sewer pipes. The City owns and operates two wastewater pollution control plants along the Bay which discharge the treated effluent to the Bay.

The North Point Water Pollution Control Plant (North Point Plant) is located on Bay and Kearny Streets at The Embarcadero. It is a primary treatment facility, with a capacity of 150 million gallons per day (mgd). It only operates during wet weather. Effluent is discharged through two outfalls located under Pier 33 and two outfalls under Pier 45.

The Southeast Water Pollution Control Plant (Southeast Plant) is located on Jerrold Avenue between Quint Street and Phelps Street. It treats all of the east side sewage flows (flows from the Northeast and Southeast Drainage Basins, which drain to the Bay) during dry weather. Secondary-treated dry-weather effluent from the Southeast Plant is discharged through the Pier 80 Outfall, located east of Pier 80. The Pier 80 Outfall conveys all of the Southeast Plant dry-weather flow, which includes all flows from the Project Area.

During rainy weather, the North Point Plant is operational for the flows from the northern part of the Project Area. Rainy-weather flows from the southern part of the Project Area (up to

140 mgd) receive secondary treatment at the Southeast Plant; flows in excess of 140 mgd, up to the treatment plant capacity of 210 mgd, receive primary treatment and are blended with the secondary-treated effluent. Wet weather effluent flow in excess of the capacity of the Pier 80 Outfall (100 mgd) is discharged through the Quint Street Outfall (capacity 110 mgd) on the south bank of Islais Creek, one block west of the Third Street Bridge.

A combination of outfall and overflow facilities contributes to surface inflow to Islais Creek. The creek accepts flows from two combined sewer overflows and the Quint Street wastewater outfall, as well as direct runoff from impervious surfaces adjacent to the creek. The two overflows are at the western head end of the creek and discharge a partially treated blend of raw wastewater and stormwater runoff during rainy weather when storage system and treatment plant capacities are exceeded. The Quint Street outfall discharges to the southern bank of Islais Creek near the bascule bridge during wet weather only when the capacity of the Pier 80 Outfall is exceeded.

Existing wastewater management problems at Islais Creek include: (1) wet weather discharges in excess of the number permitted by the Regional Water Quality Control Board (in an average rainfall year, discharges occur 47 times per year, compared to an allowable discharge of ten times per year), and (2) non-compliance with the initial dilution ratio (measured where the discharge first goes to the receiving water) from the Southeast Plant with the requirements of the "Basin Plan" (see below under Regulatory Framework for a discussion of the Basin Plan) discharge to confined waters.[7] Improvements to the Islais Creek transport and storage facilities are currently under construction and will provide storage for wastewater until it can be treated before discharge, meeting the permit requirements. Construction of these facilities is anticipated to be completed in 1997. The Department of Public Works is studying alternative solutions to the discharges of treated effluent to Islais Creek that occur after heavy rainstorms.[8]

Regulatory Framework

The U.S. Environmental Protection Agency (USEPA) is responsible for enforcing the federal Clean Water Act of 1972. The Clean Water Act established the NPDES program to regulate municipal and industrial wastewater discharges. Facilities are required to obtain an NPDES permit that specifies allowable limits for pollutant levels in the effluent. In California, USEPA has delegated the program to the State Water Resources Control Board and the California Regional Water Quality Control Boards (RWQCB).

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) regulates water quality within California and established the authority of the State Water Resources Control Board and the nine Regional Water Quality Control Boards. The San Francisco Bay waters are under the jurisdiction of the RWQCB, San Francisco Bay Region.

The RWQCB established regulatory standards and objectives for water quality in the Bay in the Water Quality Control Plan for the San Francisco Bay Basin (known as the Basin Plan).[9] The Basin Plan provides numerical and narrative water quality objectives designed to provide protection for all designated and potential beneficial uses. Among the many beneficial uses of the Bay along the Project Area are fishing and fisheries, contact water recreation (such as swimming and wading), non-contact water recreation (such as sightseeing and boating), transportation, industrial water supply, waste disposal and aesthetics. Within all of the subareas in the Waterfront project area, navigational, non-contact recreation and fishing (either sport or commercial) uses are prevalent; and waste disposal, as previously discussed, also occurs in all subareas. In the Fisherman's Wharf and South Beach/China Basin subareas, there is also water contact recreation, and industrial service supply occurs in the Southern Waterfront subarea.

NPDES Permits

The RWQCB has issued a set of NPDES permits to the City of San Francisco for operation of discharges from its combined stormwater/sewer system.[4] Effluent limitations are incorporated into the permits, which are specific to each treatment plant. Discharge prohibitions are also specified in each permit. The prohibitions for the permits are summarized below.

- During dry-weather, the discharge at any point at which the wastewater does not receive an initial dilution ratio of at least ten to one is prohibited.
- Discharge of dry-weather flow from the North Point Plant is prohibited.
- The average dry-weather flow for the Southeast Plant shall not exceed 85.4 mgd. The average shall be determined over three months every year.
- During dry-weather, bypass or overflow of untreated or partially treated wastewater to waters of the State, either at the treatment plant or from any of the collection system and pump stations tributary to the treatment plant, is prohibited.
- During wet weather, such bypasses shall be allowed, as long as they are consistent with the NPDES permit.
- Discharges from the wet weather diversion structures shall be permitted no more than four overflows per year (north shore structures), ten overflows per year (east side to Islais Creek), and one overflow per year (south of Islais Creek).

The NPDES permits are valid for five years. As part of the existing NPDES permits, Bay water quality sampling was required in the North Point off-shore area, the Pier 80 Outfall off-shore area and Mission Creek. Toward the end of the five-year permit period, the RWQCB required all dischargers to participate in a Regional Monitoring Program to assess water quality, sediment quality, benthic and fauna, and bioaccumulation throughout the Bay.[10] To this end, the NPDES point source discharges sampling frequency was reduced and the sampling emphasis shifted to the beaches.[11] The NPDES permit for the Southeast Water Pollution Control Plant is currently under renewal (as of January 1996) and the City is operating under a tentative permit until the permit is finalized and adopted.[12]

Storm Water Pollution Prevention Plans

Under RWQCB regulations, the State General Permit for Industrial Storm Water Discharges requires preparation of Storm Water Pollution Prevention Plans (SWPPPs), which include requirements for regular water quality sampling, monthly inspection of facilities, annual site inspection and certification, employee training, and annual reporting. The Port has prepared a SWPPP for stormwater runoff associated with Port activities that are industrial in nature on Port-owned and -operated property. Individual tenants leasing Port property for industrial purposes must prepare individual SWPPPs for their stormwater runoff.

The Port has initiated a group monitoring program that includes both Port-operated and tenant-operated facilities to address the monitoring requirements for both the Port's industrial activities and tenant industrial activities. The Port is working with the RWQCB to determine which tenants should be included.[13] The group monitoring plan includes all of the industrial stormwater generating facilities located on Port of San Francisco property, most of which can be classified as transportation facilities (trucking, shipping, warehousing, water transportation, fish processing, auto storage and dismantling). There were 39 facilities participating in the group monitoring plan (4 operated by the Port, the rest by Port tenants) during the 1993-94 period, and 12 participating facilities (1 operated by the Port and the rest by tenants) during the 1994-95 period. The Port has been unable to complete the monitoring program, due to staffing and funding limitations.

The Port submits to the RWQCB annual reports for Storm Water Discharges Associated with Industrial Activities on Port properties. The annual reports give general information about the group monitoring plan as well as the Port's SWPPP.

In February 1992, with the assistance of the Department of Public Works, Bureau of Environmental Regulation and Management, a comprehensive tenant survey for industrial stormwater discharge was conducted. The stormwater discharge location for each facility was identified, as well as a description of the activity at the facility, the type of pollutant that could be generated, and the locations and quantities of polluting materials.

The initial phases of the Port's SWPPP are underway, as directed by the RWQCB. Employee education is in progress, as are Best Management Practices.[14] The Port is in the process of collecting fees from participants for the group monitoring plan, as well as Stormwater Pollution Prevention Plans from each tenant.

Best Management Practices for Water Quality Protection

The Port currently employs Best Management Practices (BMPs) in the Port facilities and tenant facilities. The practices include, but are not limited to:

- Storage of hazardous materials in enclosed or covered storage area with proper secondary containment or berms. Outside chemical storage areas are contained with berms.
- Most industrial work process areas are enclosed.
- Port vehicles and equipment are serviced regularly inside a permitted repair garage.
- Deliveries are inspected to make sure containers are intact when received.
- The Port's Environmental Staff inspects Port property weekly and picks up discarded waste oil, paint or other hazardous materials and recycles or disposes of the materials. When Class I disposal is required, a licensed hauler is used.
- The Port Environmental Staff cleans up spilled oil along the waterfront using absorbent materials. Spill kits are located near sites where spills are possible.
- Port maintenance regularly sweeps all work areas and does not wash areas with a hose.
- The Port installed a waste oil recovery shed at Fisherman's Wharf to assist fishermen in proper waste oil disposal.

Water Quality Conditions

Available water quality data for San Francisco Bay in the Project Area are sporadic. There are regional data available that indicate water quality with respect to toxic pollutants in the Bay. There are also data available in the Project Area near outfalls and overflow points collected in compliance with NPDES permit requirements. There are data at selected locations in the Project Area for compliance with the storm water discharges associated with industrial activities required by the RWQCB. Additional data are available in the vicinity of the former landfills in the Project Area for compliance with waste discharge requirements associated with the landfills (see Section IV.M., Environmental Setting, Hazards and Hazardous Materials, pp. 320-321, for more information on landfills).

Overall, the water quality data from the various sources indicate that the water quality in the Bay along the Project Area meets the applicable water quality objectives, both qualitative and quantitative, established in the Basin Plan and the NPDES permits. The Port and City are working with the RWQCB on an on-going basis to assure compliance with the various RWQCB permits that have been established to protect water quality near the Project Area. The available water quality data are summarized below.

Central San Francisco Bay

Water quality conditions in the overall vicinity of the Project Area can be characterized by data collected for Central San Francisco Bay as part of the Regional Monitoring Program for the San Francisco Estuary by the San Francisco Estuary Institute.[15] This monitoring program includes regular water quality at 16 stations throughout the San Francisco Estuary and utilizes state-of-the-art sampling and analytical methods, with a high level of precision in water quality characterization. The sampling station closest to the Project Area is east of Yerba Buena Island. Water quality data for Yerba Buena Island for 1993 are presented in Table 19 for some of the conventional water quality parameters and all trace elements. The salinity of the Bay in this area ranges from about 15 to 30 parts per thousand, which is typical of estuarine waters under the influence of both freshwater inflow (from the Delta) and saltwater inflow (from the ocean). The Central Bay, in general, has the lowest levels of dissolved metals for the entire Bay due to ocean influences. As shown in Table 19, the levels of all trace elements measured (arsenic, cadmium, chromium, copper lead, mercury, nickel, selenium, silver, and zinc) were well below the Basin Plan water quality objectives. Additional water quality data, not shown in Table 19, are available for other conventional water quality parameters and for trace organic compounds, including petroleum compounds, polynuclear aromatic hydrocarbons, pesticides, and polychlorinated biphenyls. With two exceptions, the contaminant concentrations for all constituents measured were below water quality objectives established by either the Basin Plan

TABLE 19: SAN FRANCISCO BAY WATER QUALITY AT YERBA BUENA ISLAND, 1993 /a/

Constituent /b/	Units	Yerba Buena Island Station Mar-93	May-93	Sep-93	Basin Plan Water Quality Objectives for Receiving Waters /c/
pH	pH units	7.9	7.9	7.8	6.5 - 8.5
Salinity	ppt	16.07	26.86	29.62	no numeric objective
Conductivity	umhos/cm	nd	nd	39000	no numeric objective
Tot. Suspended Solids	mg/L	4.2	3.8	5.4	no numeric objective
Silver	mg/L	0.00000366	0.00005158	0.00000934	0.0023 inst. max.
Arsenic	mg/L	0.00182	0.00178	0.0023	0.036, 4-day ave.
Cadmium	mg/L	0.00003332	0.00006847	0.00006406	0.0093, 4-day ave.
Chromium	mg/L	0.00086	0.00142	0.0009	0.050, 4-day ave.
Copper	mg/L	0.00245	0.00161	0.00166	under revision
Mercury	mg/L	0.00000398	0.00000346	0.0000039	0.000025, 4-day ave.
Nickel	mg/L	0.00274	0.00179	0.00146	0.0071, 24-hr. ave.
Lead	mg/L	0.00024	0.000237	0.000269	0.0056, 4-day ave.
Selenium	mg/L	0.000132	0.000234	0.000275	under revision
Zinc	mg/L	0.00186	0.00187	0.00176	0.058, 24-hr. ave.

/a/ Water quality data for Station BC10 located east of Yerba Buena Island, which is the closest station in the Regional Monitoring Program to the San Francisco waterfront.

/b/ Values for all trace elements represent total or near-total concentration.

/c/ California Regional Water Quality Control Board, San Francisco Bay Region, 1995. 1995 Basin Plan Amendments.

ppt = parts per thousand; umhos/cm = micromhos per centimeter; mg/L = milligram per liter

SOURCE: San Francisco Estuary Institute, San Francisco Estuary Regional Monitoring Program for Trace Substances, 1993 Annual Report, 1994 or the U.S. Environmental Protection Agency. The exceptions were the concentrations of polychlorinated biphenyls, which were above EPA human health objectives at all 16 monitoring stations, and pesticides (chlordane and dieldrin) which were also above the EPA objectives at several stations in the North Bay.

Water Quality Monitoring Data for Effluent Discharges and Overflows

As part of the current and previous NPDES permit requirements associated with the wastewater effluent discharges and the combined sewer overflows, the City, through the Department of Public Works, has collected periodic water quality samples along the shoreline in the Project Area. Water quality data are available[16] as follows:

- Islais Creek and Pier 80 -- Five sampling stations in Islais Creek and six sampling stations offshore of Pier 80. Data from 1992 to 1994, with eleven sampling events in 1992 and one sampling event each year in 1993 and 1994. Samples were analyzed for salinity, conductivity, temperature, pH, dissolved oxygen, turbidity, coliform, and ammonia.

- North Point -- Five sampling locations between Piers 31 and 37. Data from 1990 through 1994. Samples were analyzed for salinity, conductivity, temperature, pH, dissolved oxygen, turbidity, coliform and ammonia.

The purpose of these portions of the NPDES monitoring program (other portions of the program involve influent or sediment sampling) is to assure that discharge of wastes do not adversely affect beneficial uses of the Bay and that water quality is protected. The parameters analyzed provide the following type of information: salinity, conductivity, temperature and pH are indicators of the general conditions at the time of sampling; dissolved oxygen is an indicator of the ability of the water to sustain marine life; turbidity is a measure of the clarity of the water and is an indicator of the amount of suspended particles in the water to which pollutants are often attached; coliform bacteria is an indicator of human wastes and the potential presence of human pathogens; and ammonia is a nutrient found in runoff and sewage which can be toxic to marine life.

Over the course of the sampling periods, the data have exhibited a range of values, reflecting the range in effluent and receiving water conditions. The most notable correlation in the water quality data is the increase in coliform level with rainfall, which is likely due to the presence of partially treated sewage mixed with rainfall runoff in the wet weather overflow. As discussed previously, a number of these wet weather overflow occurrences are allowed under the NPDES permit so that elevated coliform levels do not necessarily indicate a violation in permit requirements. Due to the limited nature of the sampling program, though, it is not possible to determine if the Bay water at these sampling locations is in full compliance with the numerical water quality objectives of the Basin Plan (which are not directly comparable to the NPDES permit requirements). However, in general, the data indicate that the discharges are meeting the objectives of the NPDES permits and that receiving waters do not appear to have been adversely affected.

As discussed previously, the recent and on-going Citywide improvements to the wastewater facilities have reduced the floatable and settleable matter being discharged to the Bay, and, including the Islais Creek Facilities Storage project currently under construction, these projects are anticipated to result in an overall long-term improvement in water quality in the Bay. The NPDES permits are periodically updated to reflect the improvements in the wastewater infrastructure as well as the current changes in State and federal water quality objectives and standards.

In addition to the NPDES monitoring program, bacteriological sampling for coliform is performed by the Department of Public Works at the public beaches along the City's waterfront, including stations in Aquatic Park in the Project Area. The purpose of this sampling is to determine the acceptability of water quality for water contact recreation based on public health criteria. If coliform levels exceed the public health standards, the City is required to post warning signs at the beaches during periods of elevated coliform bacteria; review of data collected during 1992 indicates that Aquatic Park was posted once. Additional locations along the waterfront, including the Hyde Street Harbor and Mission Creek in the Project Area, were formerly sampled but sampling was discontinued in 1994. (Because Hyde Street Harbor and Mission Creek are not public beaches, posting is not required in those areas.)

Water Quality Monitoring Data for Storm Water Discharges

As part of the State General Permit for Industrial Storm Water Discharges, the Port conducts regular water quality sampling at six locations along the waterfront, as described below. Previously, water quality monitoring under this program consisted of collecting receiving water samples from the Bay, but currently, the preferred sampling method is to sample the stormwater runoff before it reaches the Bay.[17] Most Port facilities were built in the early part of this century and have limited catch basin or stormwater conveyance systems. Instead, stormwater drains into the Bay by sheet runoff or through small individual drains through piers and sea walls. Outfalls, when they exist, often discharge below the low tide line and cannot be sampled easily.

Stormwater runoff samples are therefore collected from the top of the piers or from in or near catch basins.

The Port established six sampling zones for collecting stormwater runoff as part of the group monitoring effort. The sampling zones defined in the Group Monitoring Plan are located at the following piers:

Zone 1	Fisherman's Wharf	Pier 45
Zone 2	Northern Waterfront	Piers 27-29
Zone 3	Mission Rock Area	Parking Lot, South Beach Harbor
Zone 4	South Beach	Pier 46B
Zone 5	Central Basin	Pier 54
Zone 6	Southern Waterfront Container Terminals	Pier 80 (next to Berth C)

Wet weather (stormwater runoff) sampling parameters include: pH, total suspended solids, specific conductance, oil and grease, and chemical oxygen demand. Additionally, for the initial wet weather sampling events, the Port will test for the following indicator metals which are considered toxic pollutants and are regulated under the Basin Plan: arsenic, cadmium, chromium, copper, lead, nickel, silver, zinc, mercury and selenium. The Port will not continue to test for metals not present in "significant quantities"[18] after the initial wet weather sampling events.

Table 20 presents results of stormwater monitoring conducted to date under the SWPPP. The table includes results of a one-time sampling of receiving waters (collected in January 1994) and results of three stormwater runoff sampling events. The data for the receiving water are not directly comparable to that for the stormwater runoff, since dilution and mixing of stormwater with the ambient Bay waters occurs, at least briefly, prior to sample collection.

The data indicate that for the one-time sampling event in January 1994, the quality of Bay receiving water near the Project Area (with respect to those chemicals analyzed) appeared to meet water quality objectives for toxic pollutants for surface waters with salinities greater than five parts per thousand. However, it should be noted that in some cases, the laboratory reporting limits are higher than the water quality objective (for silver and mercury), which precludes an accurate and direct comparison of data. In addition, water quality objectives for copper and selenium are currently under consideration by the RWQCB and the USEPA, and these objectives have not yet been established for the Bay. Because of the one-time nature of this sampling event, the results cannot be extrapolated to be indicative of overall water quality conditions near

TABLE 20: SAN FRANCISCO WATERFRONT STORMWATER MONITORING DATA /a/

SAMPLE LOCATION AND SAMPLE DATE /b/

		Pier 45 Rec. Water	Pier 45 Stormwater			Piers 27/29 Rec. Water	Piers 27/29 Stormwater			South Beach Rec. Water	South Beach Stormwater		
Constituent /d/	**Units**	1/24/94	12/14/94	3/2/95	12/11/95	1/24/94	12/14/94	3/2/95	12/11/95	1/24/94	12/14/94	3/2/95	12/11/95
pH	pH units	7.70	7.03	8.40	nd	7.71	7.07	6.84	nd	7.52	7.18	6.77	nd
Chemical Oxygen Demand	mg/L	nd	nd	324	80	nd	nd	102	134	nd	nd	66	191
Conductivity	umhos/cm	46700	56	588	58.3	46700	54	24	46.3	25800	45	25	42.5
Tot. Suspended Solids	mg/L	14.8	194	678	100	23.2	734	140	254	15.8	80	100	320
Grease/Oil	mg/L	<5	<5	nd	16	<5	6	nd	25.6	<5	7	nd	25.2
Ammonia	mg/L	0.20	nd	nd	nd	0.27	nd	nd	nd	2.84	nd	nd	nd
Silver	mg/L	<0.003	<0.003	0.00864	<0.0021	<0.003	0.004	0.00293	<0.0021	<0.003	<0.003	<0.00163	<0.0021
Arsenic	mg/L	<0.012	0.021	0.0088	0.0067	<0.012	<0.012	0.01375	0.0074	<0.012	<0.012	0.00424	0.0074
Cadmium	mg/L	<0.001	0.001	0.00373	0.00162	<0.001	0.002	0.04909	0.00130	<0.001	<0.001	0.00110	0.0009
Chromium	mg/L	0.007	0.026	0.09168	0.0288	0.009	0.038	0.04909	0.0134	0.004	0.005	0.01063	0.0181
Copper	mg/L	0.007	0.033	0.129	0.0411	0.008	0.079	0.128	0.0466	0.017	0.152	0.094	0.0779
Mercury	mg/L	<0.0002	<0.0002	0.00052	<0.0002	<0.0002	0.0002	0.00767	<0.0002	<0.0002	<0.0002	<0.00025	<0.0002
Nickel	mg/L	<0.003	0.016	0.0974	0.0236	<0.003	0.018	0.0254	0.0086	<0.003	0.006	0.0302	0.0215
Lead	mg/L	<0.010	0.270	1.474	0.3492	<0.010	0.291	0.430	0.0788	<0.010	0.041	0.153	0.1149
Selenium	mg/L	<0.035	<0.035	0.01328	0.00053	<0.035	<0.035	<0.00659	<0.00025	<0.035	<0.035	<0.0659	<0.00025
Zinc	mg/L	0.002	0.377	1.595	0.4511	<0.001	0.819	1.206	0.2167	0.023	0.100	0.364	0.3412
Sodium	mg/L	nd	nd	9.48	nd	nd	nd	7.98	nd	nd	nd	4.53	nd
Iron	mg/L	nd	nd	30.266	10.742	nd	nd	10.467	6.45	nd	nd	4.798	7.064

(Continued)

TABLE 20: SAN FRANCISCO WATERFRONT STORMWATER MONITORING DATA (Continued) /a/

SAMPLE LOCATION AND SAMPLE DATE /b/

Constituent /d/	Units	Pier 46B Rec. Water	Pier 46B Stormwater			Pier 54 Rec. Water	Pier 54 Stormwater			Pier 80C Rec. Water	Pier 80C Stormwater			Basin Plan Water Quality Objectives for Receiving Waters /c/
			12/14/94	3/2/95	12/11/95	1/24/94	12/14/94	3/2/95	12/11/95	1/24/94	12/14/94	3/2/95	12/11/95	
pH	pH units	nd	7.00	6.68	nd	7.71	6.84	6.92	nd	7.74	6.93	6.96	nd	6.5 - 8.5
Chemical Oxygen Demand	mg/L	nd	nd	95	42	nd	nd	66	225	nd	nd	16	315	no numeric objective
Conductivity	umhos/cm	nd	202	19	55.3	40200	26	45	174	39200	33	26	52.6	no numeric objective
Tot. Suspended Solids	mg/L	nd	82	182	76	11.2	4	120	336	10.0	166	14	600	no numeric objective
Grease/Oil	mg/L	nd	5	nd	16.8	<5	<5	nd	24.8	<5	<5	nd	12	no numeric objective
Ammonia	mg/L	nd	nd	nd	nd	0.29	nd	nd	nd	0.75	nd	nd	nd	0.16 as un-ionized amm.
Silver	mg/L	nd	<0.003	<0.00163	<0.0021	<0.003	0.004	<0.00163	0.0021	<0.003	<0.003	<0.00163	<0.0021	0.0023 inst. max.
Arsenic	mg/L	nd	0.026	0.01873	0.0113	<0.012	0.012	0.01826	0.0488	<0.012	<0.012	0.00374	0.0112	0.036, 4-day ave.
Cadmium	mg/L	nd	0.003	0.00429	0.00101	<0.001	<0.001	0.00353	0.00381	<0.001	<0.001	0.00102	0.00043	0.0093, 4-day ave.
Chromium	mg/L	nd	0.016	0.02903	0.0081	0.005	0.003	0.0581	0.1526	<0.001	0.031	0.00274	0.010	0.050, 4-day ave.
Copper	mg/L	nd	0.116	0.464	0.0471	0.004	0.019	0.105	0.4495	0.004	0.071	0.037	0.0514	under revision
Mercury	mg/L	nd	<0.0002	<0.00025	<0.0002	<0.0002	<0.0002	0.00071	<0.0002	<0.0002	<0.0002	<0.00025	<0.0002	0.000025, 4-day ave.
Nickel	mg/L	nd	0.018	0.0406	0.0083	<0.003	0.009	0.034	0.0483	<0.003	0.022	0.0059	0.0107	0.0071, 24-hr. ave.
Lead	mg/L	nd	0.710	1.103	0.0682	<0.010	0.011	0.348	0.7689	<0.010	0.309	0.022	0.0866	0.0056, 4-day ave.
Selenium	mg/L	nd	0.036	<0.00659	<0.00025	<0.035	<0.035	<0.00659	0.00033	<0.035	<0.035	<0.00659	<0.00025	under revision
Zinc	mg/L	nd	0.685	2.027	0.2104	<0.001	2.506	2.045	2.2869	<0.001	0.433	0.087	0.143	0.058, 24-hr. ave.
Sodium	mg/L	nd	nd	11.35	nd	nd	nd	14.20	nd	nd	nd	3.82	nd	no numeric objective
Iron	mg/L	nd	nd	16391	3.153	nd	nd	20124	31.080	nd	nd	924	4.078	no numeric objective

/a/ As required by the Regional Water Quality Control Board, water quality samples collected in 1994 were for receiving water quality (i.e., Bay water), but for subsequent sampling, stormwater runoff samples were collected.

/b/ See Figures 2 to 6, pp. 24 to 34, for approximate sample locations. Sampling dates are shown under the sample locations.

/c/ There are no regulatory standards applicable to stormwater runoff. Basin Plan water quality objectives would be applicable to receiving water only. RWQCB, 1995 Basin Plan Amendments.

/d/ Samples collected by Port personnel and analyzed Department of Public Works, Southeast Laboratory.

SOURCE: Port of San Francisco, 1995 and 1996 the Project Area. A longer record of water quality sampling in the Project Area, with accepted quality control procedures similar to the Regional Monitoring Program, would be necessary to determine a more accurate depiction of Project Area water quality conditions. There are no plans for implementing such a water quality sampling program in the Project Area, although results from the Regional Monitoring Program, discussed above, provide representative water quality data for central San Francisco Bay.

Table 20, p. 283, also presents results of stormwater runoff samples. There are no regulatory standards or objectives for stormwater runoff, and the data provide only an indication of the type and concentration of pollutants present in the stormwater runoff. No measurement of stormwater flow is collected, so that no mass loading of pollutants can be determined. Additional stormwater sampling data are needed to determine if there are any trends in the type and concentration of pollutants present in the runoff or to determine if Best Management Practices being implemented by the Port are effective in protecting water quality.

Bay Water Quality Near Landfills

The Port collects quarterly Bay water and groundwater samples near the sites of three closed Class III solid waste disposal landfills, located at Pier 70 (south of Central Basin), Pier 94 (south of Islais Creek) and Pier 98 (north of India Basin). The water quality sampling is part of a self-monitoring program that began in 1990 under the direction of the RWQCB Orders (Order 87-060, Order 87-061, and Order 87-062). The Orders specify waste discharge requirements, including self-monitoring programs for each solid waste disposal site. Groundwater and surface waters are monitored quarterly. Pier 70 has four groundwater monitoring wells, Pier 94 has seven wells, and Pier 98 has five wells. Surface water is sampled at one sampling station at each of the three piers.

Surface water samples were analyzed for indicator parameters (pH, specific conductance, temperature, salinity, total petroleum hydrocarbons, total dissolved solids, and total organic carbon), anions (chloride, nitrate, sulfate, and total kjeldahl nitrogen), trace organics, and semi-volatile organic compounds (base/neutral compounds, pesticides and acid extractable compounds). Groundwater samples were analyzed for similar parameters. The annual self-monitoring reports summarize the results of the monitoring program as well as identify trends in sampling results over the course of the monitoring program. The reports also compare the results from surface water and groundwater samples to determine if ground water quality is affecting surface water quality. The 1994 annual report presents conclusions based on results collected from 1989 to 1994, and the report states that at all three waste disposal sites, "no impacts have been observed in the water sampled from the Bay."[19, 20]

GROUNDWATER

The Project Area extends through three of the seven groundwater basins underlying the City and County of San Francisco: the Marina, Downtown, and Islais Valley Groundwater Basins. Only the Fisherman's Wharf subarea extends into the Marina Groundwater Basin and only the Southern Waterfront subarea extends into the Islais Valley Groundwater Basin; all other subareas overlie the Downtown Groundwater Basin.

The Downtown Groundwater Basin is the largest of the eastside groundwater basins in the City, with an areal extent of approximately 7,500 acres. Groundwater flow is generally from the bedrock ridges through Russian Hill, Pacific Heights and Twin Peaks toward the low-lying areas where the historic creek beds were located and then toward San Francisco Bay.

The predominant source of groundwater recharge in the Downtown Basin is from leakage from the high density of sewer and water delivery pipes in the downtown area. Groundwater discharge in the Downtown Basin includes pumping for dewatering, pumping for non-potable uses (such as for fountains, toilets, irrigation or boiler water), and outflow to the Bay. Most pumped groundwater goes directly to the City's sewer system. Due to the relatively high water table in the Downtown Basin, dewatering operations are required for building foundations, underground structures (such as BART stations) and construction sites. Depth to groundwater along the waterfront has been observed to range from 4 to 14 feet below ground surface. In general, due to the type and density of historic industrial/manufacturing uses in the downtown area, the quality of groundwater is not suitable for drinking water but is adequate for non-potable uses.[21]

Only the northernmost part of the Project Area, the Fisherman's Wharf subarea, extends into the Marina Groundwater Basin, which is separated from the Downtown Groundwater Basin by a bedrock ridge that runs through Pacific Heights and Russian Hill. In general, groundwater in the Marina Basin is shallow and flows from the bedrock ridge toward the Bay. Along the waterfront, the subsurface soils consist of Bay Mud overlain by sandy fill and there is the potential for subsidence if groundwater pumping creates pressure on the Bay Mud. Currently, there are no known groundwater users in the area.[21]

The Southern Waterfront subarea is underlain by the eastern border of the Islais Valley Groundwater Basin, which is separated from the Downtown Groundwater Basin on the north by a continuous bedrock ridge that runs from Potrero Point to Bernal Heights, Diamond Heights and Twin Peaks. In general, the water table is shallow and the groundwater flow direction is from the bedrock ridges toward the historic creek bed of Islais Creek and then toward the Bay. Bay Mud occurs in a large portion of the Southern Waterfront subarea, and artificial fill has been placed over the Bay Mud. Although historically there were groundwater wells in the area, there are currently no known groundwater users in the area.[21]

The RWQCB has outlined specific requirements for the discharge of groundwater into San Francisco Bay from the City's construction projects.[21] The major category of pollutants of concern is heavy metals. Based on available groundwater quality data, the discharge requirements are intended to balance the needs of various construction projects and the need for water quality protection for the Bay. The groundwater discharge requirements are as follows:

- The Southeast Plant shall be utilized whenever it is possible;
- On-site treatment shall be used whenever possible, and on-site treatment shall include but not be limited to dewatering through Baker Tanks with sufficient residence time to allow the metals adhering to the suspended solids to settle out;
- Annual mass loading from all countywide construction projects is restricted according to specified loadings (discharge requirements from all Citywide dewatering construction projects should not exceed one percent of the annual average mass metal load per pollutant for the last four years); and
- The City will perform a monthly monitoring on the groundwater discharges and submit a quarterly technical report to the RWQCB to identify the discharge volume and mass loading calculations for the period.[22]

These requirements are carried out by the Department of Public Works, Bureau of Construction Management.

DREDGING

The U.S. Army Corps of Engineers (COE) has jurisdiction over fill, dredging and disposal of dredge spoils under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act, and the Port is required to obtain a permit from the COE to conduct any of these activities along the shoreline of the Project Area. The RWQCB must grant Water Quality Certification for dredging and disposal activities in the Bay based on assessments of the potential for dredging and dredged material disposal to result in violation of water quality objectives. The RWQCB and the USEPA are responsible for determining appropriate dredged material pollutant testing and discharge standards, and for assuring that dredging and the disposal of dredged materials are consistent with the maintenance of Bay water quality. The USEPA and the COE have joint federal responsibility for regulating ocean, Bay and wetland disposal of dredged material. In addition, the Port is required to obtain a development permit from the San Francisco Bay Conservation and Development Commission (BCDC) for any activities involving excavation, fill or change in the use of water, land or structures within 100 feet inland of the Bay shoreline, including all dredging activities. The Port also requires approval from the State Lands Commission pursuant to the Public Resources Code for dredging activities in the Bay on lands leased from the State.

Historically, the high sedimentation rates in the naturally shallow waters of the Bay have made regular dredging necessary to maintain safe navigation channels and harbors for port facilities and flood control channels. Dredging the Bay for maritime trade, recreational boating and other public uses creates an annual disposal requirement for the Bay of between 3 and 11 million cubic yards of dredged material.[23] The disposal of dredged sediments has been controversial in recent years due to the potential effects on water quality and marine biota and habitats. In 1991, the COE initiated a Long Term Management Strategy which is a comprehensive regional management plan to study Bay dredging issues and to develop a long-range program for Bay dredging and dredged material disposal. Environmental review of the plan is expected to be completed in 1996.

In recent years, materials dredged from the Bay have been disposed at one of four Bay sites designated by the COE. These sites are located where the dredged material is expected to disperse and the maximum amounts would be carried out the Golden Gate on the ebb tide and cause the least amount of environmental impact. The four sites are: off Alcatraz Island, San Pablo Bay, the Carquinez Strait, and the Suisun Bay Channel. However, even at the site nearest the ocean, less than half of the disposed material is carried out to sea by the tides. Capacity at Alcatraz Island is limited because over the years a mound of material has formed which, unless future disposal is properly managed, may adversely affect the water circulation and Bay aquatic life and pose a hazard to maritime navigation. Potential alternatives to in-Bay disposal of dredged material include non-tidal upland disposal sites and ocean disposal.

The Port currently has a Department of the Army Permit to perform maintenance dredging of the Port's facilities for a maximum of 878,000 cubic yards over a 30-month period which ends

November 1, 1996.[24] Section IV.I., Environmental Setting, Geology, Soils and Seismicity, p. 250, describes general depths and locations of current dredging. In 1993, the Port applied for a permit from the COE to continue to perform maintenance dredging along the Project Area over a five-year period.[25] A total of 1,845,000 cubic yards of sediment are proposed to be dredged and disposed of at the Alcatraz site. The BCDC approved a separate permit for a total of 878,000 cubic yards over a 30-month period, to begin before October 1, 1994.[26] The BCDC approval indicated that to protect important fisheries or migrating anadromous fish species, no dredging shall occur between December 1 and March 1 of any year without written approval, to protect Pacific herring spawning.

Past disposal practices for dredged materials have resulted in the re-suspension of chemicals into the Bay water through the disturbance and re-location of Bay sediments. Chemicals present in Bay sediments that have been affected by human activity are not distributed evenly in the Bay, and there may be localized areas with high concentrations. Dredging and disposal of dredged materials can re-suspend and re-distribute chemicals in the water column, making them accessible to marine organisms and resulting in possible water quality effects on natural resources of the Bay.[27] However, the Port has been granted a Waiver of Water Quality Certification for previous dredging activities, based on the testing of sediments to be dredged that indicated that the quality of those sediments would not likely result in water quality effects.[28]

Sediments in the vicinity of Islais Creek have been identified as an area of concern due to the historic municipal and industrial discharges that have since been eliminated (though current discharges of partially treated effluent still occur). The area of concern, the headwater of the Islais Creek tidal channel, is located above the Third Street Bridge. This area formerly received discharge from the City's primary wastewater facility and other industrial sources. Due to the gradient, sediment levels and lack of circulation in Islais Creek, the area above the Third Street Bridge acts as a sediment trap. However, sediment testing by the Port in portions of Islais Creek has not documented significantly elevated levels of metals, organic chemicals or polynuclear aromatic hydrocarbons.[29] Other periodic sediment testing data has been conducted by the Port as part of the permit requirements for maintenance dredging[30] and by the Department of Public Works as part of the NPDES permit self-monitoring program for the Southeast Water Pollution Control Plant. As discussed above, sediment testing for maintenance dredging has indicated that sediment quality is adequate for the RWQCB to grant a Waiver of Water Quality Certification. Results of NPDES testing have also satisfied RWQCB requirements.

NOTES - Hydrology and Water Quality

1 City and County of San Francisco, Department of Planning, Draft Environmental Impact Report, Bayside Discharge Alternatives, 92.531E, SCH #93023040, May 20, 1994.

2 Gilliam, Howard, *San Francisco Bay*, Doubleday & Company, Garden City, New York, 1957.

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4 California Regional Water Quality Control Board, San Francisco Bay Region. Order No. 95-039, NPDES Permit No. CA0038610, Reissuing Waste Discharge Requirements for City and County of San Francisco, Bayside Wet Weather Facilities, including the North Point Water Pollution Control Plant, San Francisco County, February 15, 1995.

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K. PUBLIC SERVICES AND UTILITIES

SETTING

Public services and utilities describes services provided to the Port by the City and County of San Francisco, including fire protection, water supply, police protection, recreation and parks, sewers and wastewater treatment, and solid waste disposal, as well as services provided by others including the U.S. Coast Guard.

Existing service requirements and facilities on Port lands, and general Citywide issues are discussed for each service in the Setting section.

Fire Protection

Citywide Service

The San Francisco Fire Department provides fire protection to Port properties. The Port of San Francisco Fire Marshal conducts inspections and investigates fires, hazardous material incidents and other emergencies occurring on Port property.[1] The U.S. Coast Guard responds to incidents at sea and assists the San Francisco Fire Department along the waterfront when called upon.[2]

The Fire Department has two rescue teams that respond to emergency, life-threatening incidents anywhere in the City. The Fire Department also has firefighters on duty at all times who are trained scuba divers and are called in case of fire in the sub-structure of piers or to handle water rescues.[1]

An alarm for a fire or call for aid is routed to the Fire Department's Communications Center, which processes the call, dispatches personnel and classifies calls as false alarms, fire or non-fire (e.g., resuscitation, first aid, extraction of trapped persons) incidents.[3] When fire engines are called out, back-up coverage occurs at those stations automatically so that no district of the City is ever left without some emergency capabilities.[3]

Fire Department personnel regularly staff the Port. A fire engine and two fireboats are housed at Pier 22½. The Port's budget pays for a Fire Marshall, on regular duty five days a week, and on call 24 hours per day; a three-person crew for the fireboat consisting of a pilot, an engineer, and an officer, staffed 24 hours per day, seven days per week. Besides the Fire Marshall, the fireboat staffing has a pool of 15 individuals to fill all shifts (9 full time and 6 part time). The fireboats (only one of which is in service at a time) are owned and maintained by the Fire Department and not the Port. The crew of the fire engine at Pier 22½ is regular staff of the San Francisco Fire Department and not paid for by the Port; however, the three firefighters may assist the fireboat crew when an incident does not require an engine response. Eight fire stations are located near waterfront properties and would be the first line of backup during emergencies.[4] Figure 44 shows the location of the mentioned Fire Department facilities.

No major incidents involving the San Francisco Fire Department occurred on Port property in fiscal year (FY) 1993-1994. There were, however, minor first aid calls.[1] There were 38 Coast Guard emergency responses in calendar year 1993 and 59 in 1994, frequently involving recreational boating incidents.[5] In FY 1994-1995, there was one fire incident, at a recycling business near Pier 48.

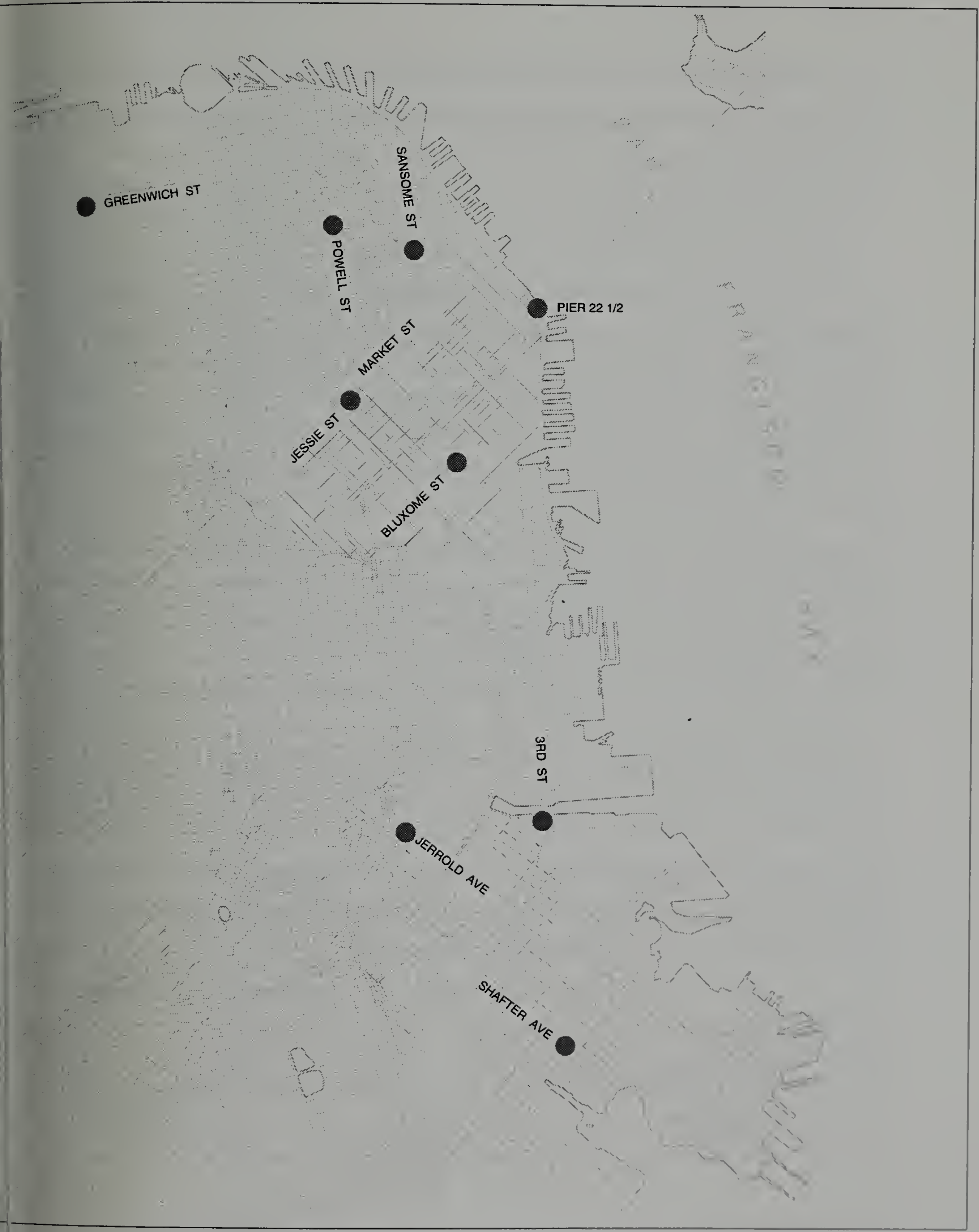
The Fire Department considers access to waterfront properties adequate.[6] In most cases, response times are within five minutes since several stations are close to the waterfront.[7]

Water Supply for Firefighting

The Fire Department uses both the low-pressure domestic water system and the Auxiliary Water Supply System (AWSS) for firefighting on Port properties. The AWSS is completely independent of the domestic water distribution system and is under the sole jurisdiction of the Fire Department. It provides a secondary source of water exclusively for firefighting purposes. This is commonly referred to as the "high-pressure system" and is located adjacent to and just inland of The Embarcadero, below grade.[8] The domestic system is normally the first water supply to be used, providing 1,000 gallons per minute (gpm). The high-pressure system provides 10,000 gpm. The water mains are in satisfactory condition and both the water supply and pressure are considered adequate for firefighting purposes.[9] Firefighters are also able to use water from the San Francisco Bay either as firefighting water or as water to boost the pressure of the AWSS.[1]

Fire Safety Ordinances

Laws and ordinances governing building structure design and equipment requirements for fire detection, restraint and extinguishment are in the California Administrative Code Title 24 and the Life Safety Provisions of the San Francisco Uniform Building Code, 1991, as amended in



Environmental Science Associates and
San Francisco Planning Department

San Francisco Waterfront Land Use Plan EIR ■

Figure 44

Fire Department Facilities
Covering Project Area

1992. Enforcement of these laws and ordinances is the responsibility of the Bureau of Fire Prevention.[10] The Fire Marshal conducted 201 building inspections on Port properties during FY 1993-1994.[11]

Hazardous Materials Responses

Incidents involving known hazardous materials are handled by the Fire Department's Hazardous Material Response Unit located at Fire Station 36 at 109 Oak Street (the unit is temporarily located at 109 Turk Street during fire station renovations).[12] The Coast Guard operates as the lead agency for spills of hazardous materials in the water (coordinated out of its Marine Safety Office in Alameda).[2] The Fire Department handled fewer than five hazardous material incidents within the Project Area during FY 1993-1994.[13] Special procedures for fires involving hazardous materials include evacuating the downwind population, approaching the fire from upwind, and using chemically resistant airtight suits and respiratory protection. Certain types of fires (e.g., those involving pesticides) may be contained and allowed to burn out rather than extinguished to prevent the spread of the hazardous materials via contaminated water. Industrial fires are more likely to involve hazardous materials than are residential fires. However, industrial fire incidents are relatively few, due to the use of sprinkler systems and the inspection program.[10]

The San Francisco Fire Code (as well as the San Francisco Health Code) establishes a system for permitting and monitoring the use and disposal of hazardous materials. To minimize the danger from fire involving hazardous materials, the Fire Department Hazardous Materials Section works with the Health Department to identify the hazardous materials stored in San Francisco. Local fire stations are informed when hazardous materials are stored in cargo containers at truck terminals and when fumigation is underway at the piers.[14]

Police Protection

Police Department personnel are assigned to the Office of the Chief and four bureaus: Field Operations, Investigations, Technical Services, and Administration. Patrol functions are performed by the police officers of the Field Operations Bureau out of nine District stations.[15]

Port properties are served by three Police Department Districts: Central District - Hyde Street to Pier 1; Southern District - Pier 1 to China Basin Channel; and Potrero District - China Basin Channel to Evans Street. These districts include inland areas that do not fall under Port jurisdiction.

About 10.2 percent of the patrol force (102 officers) is assigned to areas that include Port property. Police resources are committed as needed and therefore more of them, including staff and vehicles, are concentrated in areas with higher activity (e.g., Fisherman's Wharf). The Central District (Fisherman's Wharf, Northeast Waterfront, and part of Ferry Building subareas) have about 56 patrol officers. The Southern District (part of the Ferry Building subarea and about one-half of the South Beach/China Basin subarea) has about 15 patrol officers, and the Potrero District (one-half of the South Beach/China Basin subarea and the Southern Waterfront subarea) has about 31 officers. When the demand for officers exceeds the number of officers normally assigned and available, other officers are called upon as backup from the same district or a nearby district. In addition, either uniformed or civilian-attired officers who are not from the district stations may be assigned to busy areas.[16] The Port pays for one police officer to exclusively service the Project Area during normal business hours, five days per week.

The average response times (measured from the time the call is received to the time officers arrive on the scene) for the City as a whole are approximately 6 minutes for Priority A calls (life-threatening situations, severe assaults and crimes in progress) and about 14 minutes for Priority B calls (urgent situations where the crime has already occurred). The average response times for Priority A and B calls in the Central District are about 7 and 14.5 minutes, respectively; in the Southern District, about 5 and 15 minutes, respectively; and in the Potrero District, 6 minutes and 45.5 minutes, respectively.[17] Priority C calls involve relatively minor infractions with no imminent risk to public safety or property.

In 1994, police received 283 Priority A calls, 921 Priority B calls, and 643 Priority C calls in the Central District (Fisherman's Wharf, Northeast Waterfront, and part of Ferry Building subareas). Police received 290 Priority A calls, 1,023 Priority B calls, and 915 Priority C calls in the Southern District (part of the Ferry Building subarea and about one-half of the South Beach/China Basin subarea). They also received 246 Priority A calls, 842 Priority B calls, and 951 Priority C calls in the Potrero District (one-half of the South Beach/China Basin subarea and the Southern subarea).

Schools

San Francisco Unified School District

There are no public schools on Port properties. Elementary school children who live in the South Beach/China Basin subarea (the only subarea with a resident population) are assigned to the Bessie Carmichael School, located near Sixth and Harrison Streets. Older children may be assigned to one of various schools.

Recreation and Parks

Existing Project Area Open Space and Recreation Facilities

The area within and surrounding the Project Area is not served as well as some City neighborhoods in terms of "traditional" parks with large grassy open spaces. However, there are other kinds of open space and recreational amenities. Figure 23 in Section IV.B., Environmental Setting, Land Use and Zoning, p. 159 shows the location of existing park, open space, public access and recreational opportunities available in the Project Area.[18] Most of these shoreline parks, open spaces, and boating facilities are provided and maintained by the Port of San Francisco and its tenants. Facilities include piers with benches and fishing facilities, promenades along the waterfront, small landscaped areas, boat harbors, and three wetland areas.

The San Francisco Recreation and Park Department (Rec/Park) owns and leases land adjacent to the Hyde Street Harbor to the Dolphin Club and South End Rowing Club. Improvements to that property require Rec/Park approval. Rec/Park also owns land in India Basin near Pier 98 that is being developed as a park.[19] Rec/Park developed the boat launch area at Pier 52; however, maintenance of this facility is now the responsibility of the Port. The Port maintains public access on piers (except for Pier 39, which is maintained by the commercial tenants), at the ferry terminals, at small landscaped areas like Warm Water Cove and Agua Vista park, and wetlands near Seawall Lot 352 and Pier 98. Other public agencies involved in open spaces include the San Francisco Department of Public Works, which maintains an area bordering Islais Creek, and the Redevelopment Agency, which is responsible for the area around the South Beach Yacht Harbor and Pier 40.[18] These open spaces and others are discussed in Section IV.B., Environmental Setting, Land Use and Zoning, and are shown in Figure 23 in that section, p. 159.

Generally, park maintenance requirements depend on the kind of park vegetation, the presence of structures to maintain, and the frequency/intensity of park use. Rec/Park maintenance employees include gardeners, painters, plumbers, carpenters, electricians and custodians.

Public Health Services

The San Francisco Department of Public Health (DPH) provides all public health services in San Francisco, administered from the central office at 101 Grove Street. Programs are administered at District Health Centers for residents. The South of Market Health Center at 155 Minna Street is nearest to residents in the South Beach/China Basin subarea.

Emergency Medical Services

Ambulance service in San Francisco is provided by the Paramedic Division of San Francisco General Hospital ambulance service, with back-up service provided by three private ambulance companies. DPH Central Medical Emergency Dispatch received approximately 70,000 requests for medical assistance in the 1994 calendar year. Approximately 95 percent of the total ambulance responses in San Francisco are provided by the City ambulance service.[20]

Central Medical Emergency Dispatch staff rate each ambulance request according to the eriousness of the illness or injury. Code 1 calls are for routine transport, such as scheduled rides o the hospital for bedridden patients. Code 2 calls are "urgent," but with no imminent danger e.g., a fractured leg), and Code 3 calls are "life-threatening emergencies," such as a heart attack. The San Francisco Fire Department also responds to all Code 3 medical emergencies. All fire ersonnel are trained in resuscitation and first aid, and all fire companies carry first aid quipment.[21]

Of the total ambulance responses in the City each year, about 40,000 are classified as Code 1 or Code 2 and about 26,000 are Code 3 responses. In 1994, the Citywide mean ambulance response me for Code 3 calls, measured from the moment the Central Medical Emergency Dispatch eceives a call to when an ambulance reaches the scene, was 7.66 minutes.[20]

he waterfront subareas are essentially covered by two ambulance response zones. The isherman's Wharf, Northeast Waterfront and Ferry Building subareas fall within Zone 1. The outh Beach/China Basin subarea is within both Zones 1 and 6. The Southern subarea is within one 6. The February 1994 mean response times for Zone 1 and Zone 6, respectively, were 5.78 nd 8.39 minutes. Limitations to ambulance response in waterfront areas includes poor mapping f streets in the Southern and South Beach/China Basin subareas.[20]

Community Public Health Program - Environmental Health Services

Environmental Health Services is staffed by environmental health inspectors who conduct periodic inspections of food, dairy, water, toxic materials, and waste facilities; monitor occupational health and safety; provide surveillance of public and private institutions (e.g., nursing homes, child care centers); investigate housing complaints and conduct hotel inspections; inspect solid waste management plants; inspect for rodents and other disease-carrying organisms; and enforce the City's Smoking Pollution Control Ordinance. DPH has identified the possible existence of rodent populations in abandoned buildings along the waterfront.[22]

Toxics Control Management Program

DPH has developed and implemented a program for the handling of hazardous wastes generated by local businesses and City departments, and also prepared a comprehensive toxic control program to oversee the management of all toxic and hazardous materials with the City.[23] DPH staff are involved in the enforcement and implementation of over 400 federal, State, and local toxics regulations.[24]

Water Supply

The San Francisco Water Department stores and distributes potable water for domestic use and fire protection in San Francisco. The system also serves areas of San Mateo, Alameda and Santa Clara counties through the wholesaling of water to public and private water companies along water transmission routes. Transmission mains deliver water to 14 storage and distribution reservoirs in the City.[25] In December 1994 and January 1995, Citywide average water demand was 64 million gallons per day (mgd).[26] The 1994 peak demand of 75 mgd occurred in July. The Water Department's capital improvement program provides for renewing and improving the water system on a continuing basis. The replacement program assesses the efficacy of mains based on their leakage or breakage problems, their materials, their surrounding soil, and their suitability for proposed new land uses. The department also considers major changes in land use that could cause large increases in demand.[26]

The Water Department has not identified current water supply problems in the Project Area. Although some older mains may have reduced capacity due to internal crusting, they continue to function adequately.[27] Furthermore, there are no physical barriers to providing adequate water service to all Port properties. City mains generally extend to the Bay side of The Embarcadero or to private property lines. There is no reason that private lines could not service piers and other properties.

Sewers and Wastewater Treatment

The Clean Water Program, a division of the San Francisco Department of Public Works, manages the planning, design and construction of new wastewater facilities in the City. The City's combined wastewater system collects both rainfall runoff and sewage from residential, ndustrial and other uses. San Francisco sewage is treated at three water pollution control plants. The Southeast and North Point plants are components of the Bayside Core system, which serves he eastern portion of the City, including all waterfront properties. The Southeast plant treats dry- and wet-weather flows from this portion of the City; the North Point plant operates as a back-up facility during wet-weather periods only. The Oceanside treatment plant serves the west side of San Francisco.[28]

About 85 million gallons of sewage (average dry-weather flow) are currently treated by the Bayside Treatment Plant each day. The whole City has 45.9 billion gallons of annual wastewater low of which 36.6 billion gallons are sewage and 9.3 billion gallons are stormwater, based on a 72-year average of rainfall data.[28] Because of combined sewer and storm drains, the treatment system cannot handle all of the wastewater produced during storms. When the rainfall exceeds 0.02 inch per hour, treatment plant capacity is exceeded. Untreated wastewater flows into torage facilities where some settling of solids occurs (referred to as flow-through treatment). If torage capacity is exceeded, the minimally treated wastewater will flow into San Francisco Bay and the Pacific Ocean through about 28 overflow structures located on the perimeter of the City overflow points are shown on Figure 43 in Section IV.J., Environmental Setting, Hydrology and Water Quality, p. 271).[29] The Water Pollution Control Bureau of DPW tests water quality and bacterial levels monthly in the San Francisco Bay, for compliance with State standards in the Health Services Health and Safety Code, Title 22. If raw sewage overflows occur, DPW posts igns prohibiting contact with contaminated water. (Water quality issues are discussed in Section IV.J., p. 277.)

The San Francisco Wastewater Master Plan, adopted in 1980, provides for construction of an ntegrated system of sewers, tunnels, pumping stations, treatment plants, storage facilities, and utfall facilities. The Clean Water Program of the Department of Public Works has identified and is nearing completion of several storage facilities located within the Islais Creek area that will address requirements of the Regional Water Quality Control Board for control of combined sewer overflow.

By the end of 1996, all of the Bayside Core facilities (including those near Islais Creek) will be completely operational. When fully completed, they will be capable of collecting and treating all dry-weather combined Bayside flows to the secondary level, and 85 percent of San Francisco's wet-weather Bayside flows before discharge. Fifteen percent of the wet-weather combined flows will receive flow through primary treatment at the storage/transport facilities. With the structures that have already been brought on line, yearly untreated wastewater overflows have dropped from 46 overflows to between ten and one.[29] In addition, the Clean Water Program is now involved in the evaluation of alternatives to reduce treated effluent discharges into Islais Creek.

Typically sewer mains on Port properties have a diameter of four feet or greater. Main size is larger toward the Bay than upgradient, as it functions on a gravity system. Some Port properties have pump stations to get the sanitary flow into the City's combined flow system. With few exceptions, storm drainage on the waterfront piers does not flow into the City's system but goes directly into the Bay.

Property Maintenance

Port personnel are responsible for the maintenance of most pier substructures. Responsibilities for maintenance of the balance of waterfront property vary depending on specific lease agreements. In general, however, Port properties are maintained by a staff (mostly housed at Pier 46B) that includes crane mechanics, electricians, plumbers, carpenters, pilemen, roofers, painters, asphalt finishers, welders, sheetmetal workers, stationary engineers, auto mechanics, truck drivers, iron workers, an operating engineer, a gardener and general laborers. Regulatory compliance services are provided by a five-person environmental services group. The Port spent an average of $1.3 million per year for five of the last six years (1989-1994) in routine maintenance materials costs (this does not include labor expenditures).[30]

Waterfront facilities are dredged on an as-needed basis. Port staff oversee regulatory permitting (through the Bay Conservation and Development Commission, the Regional Water Quality Control Board, the State Lands Commission, and the Army Corps of Engineers) and sediment testing associated with maintenance dredging at active maritime facilities. Frequency and depth of dredging depend on the size of ships using piers, weather conditions, and movement of Bay currents. The most frequently dredged piers in recent years have been Pier 94/96, Pier 80, Islais Creek, Pier 27/29, and Pier 35. A high percentage of the dredging costs are related to the testing and disposal of the dredged materials. If sediments fail to meet water quality criteria, materials have to be disposed of in an upland location.[31] (Refer to Section IV.J., Environmental Setting, Hydrology and Water Quality, pp. 287-289, for further information concerning dredging.)

Solid Waste Disposal

The City and County of San Francisco generated an estimated 1,027,170 tons of solid waste or about 2,810 tons per day in 1994, disposed of approximately 630,000 tons, an average of about 1,730 tons per day, and recycled the remainder.[32] Activities on Port properties generate a total of about 7,390 tons of solid waste per year, or less than 1 percent of the City's total.[33] Present generation of solid waste on Port properties includes approximately 950 tons per year collected by Port employees, and about 470 tons collected by Sunset Scavenger and Golden Gate Disposal Company from those Port tenants creating the larger waste streams. About 3,000 cubic yards of construction debris are collected by the Firma Company under contract to the Port; the debris can go directly to a licensed landfill or can be recycled.[34] The rest is collected via individual contracts with recyclers and solid waste companies.[35]

Solid waste collected throughout the City by Golden Gate Disposal and Sunset Scavenger Companies is transported to the solid waste transfer station at the San Francisco - Brisbane border, and from there hauled by the Sanitary Fill Company to the Altamont Landfill northeast of Livermore in Alameda County. San Francisco has a contract for disposal of all of its solid waste at the Altamont Landfill until 2013. The City currently does not have under consideration disposal solutions beyond those for 2013.[36]

Port Commission offices recycle paper as part of a City program. The Port recycles 300 tons of concrete and asphalt, 10 tons of auto scrap metal, and 10 tons of non-auto scrap metal annually.[33] Various activities are in progress that may further reduce the volumes going to landfill. Sanitary Fill Company is proposing to develop a Material Recovery Facility, which would divert some waste now being landfilled. There is no current City and County contract to have door-to-door recyclables collection for commercial properties; however, many businesses make their own arrangements with private recyclers for pick-up of items like paper, cardboard, bottles, cans, and wooden palettes. The City plans to focus efforts (e.g., public education) to expand recycling for businesses.[33]

NOTES - Public Services and Utilities

[1] Scales, Frank, Assistant Deputy Chief, San Francisco Fire Department, telephone conversation, March 24, 1995.

[2] Bill, James, Senior Controller, U.S. Coast Guard, telephone conversation, March 14, 1995.

[3] Scales, Frank, Assistant Deputy Chief, San Francisco Fire Department, telephone conversation, March 24, 1995.

[4] Chief Scales has provided a list of nearby fire stations:
Station # 1--416 Jessie Street
Station # 2--1340 Powell Street
Station # 8-- 36 Bluxome Street
Station # 9--2245 Jerrold Avenue
Station # 13--530 Sansome Street
Station # 16-- 2251 Greenwich Street
Station # 17--1295 Shafter Avenue
Station # 25--3305 Third Street.

[5] Kaiser, John, U.S. Coast Guard, telephone conversation, May 23, 1995.

[6] In some cases, south of the Ferry Building, access to the Project Area is slightly hampered by physical barriers. For example, in the case of the June 1995 fire in the recycling business, emergency vehicles were blocked from passing through a Mission Bay street, where a gate had been added. Nevertheless, the Fire Department vehicles were able to reach the site in 3 to 5 minutes.

[7] Cereghino, Ken, Fire Marshal, interview, November 30, 1995.

[8] Scales, Frank, Assistant Deputy Chief, San Francisco Fire Department, telephone conversation, March 24, 1995, and SFFD responses to questionnaire, Captain Michael Kearney, March 20, 1995.

[9] Scales, Frank, Assistant Deputy Chief, San Francisco Fire Department, telephone conversation, March 24, 1995, and Mission Bay EIR, certified August 23, 1990, pp. VI.D.4-VI.D.5.

[10] Mission Bay EIR, p. VI.D.5.

[11] Kearney, Michael, Captain, San Francisco Fire Department Support Services Division, March 20, 1995. Responses to questionnaire from Alice Glasner, Planning Department.

[12] Kearney, Michael, Captain, San Francisco Fire Department Support Services Division, March 20, 1995. Responses to questionnaire from Alice Glasner, Planning Department, and telephone conversation with Chief Scales, March 24, 1995.

[13] Grey, Jerry, Captain, Hazardous Materials Section, San Francisco Fire Department, telephone conversation, April 28, 1995.

[14] Cereghino, Ken, Port Fire Marshal, telephone conversation, May 3, 1995.

[15] Mission Bay EIR, p. VI.D.6.

[16] Lutes, Steve, San Francisco Police Department, response to Department's inquiry, received July 17, 1995.

[17] San Francisco Police Department, Response Time Report (Citywide) for period January 1, 1994 to December 1994.

[18] Park and open space information was provided by Kari Kilstrom, Planner for Port of San Francisco.

[19] Learner, Debra, Recreation and Park Department, telephone conversation, March 28, 1995.

[20] Palafox, Jorge, Emergency Medical Services, San Francisco Department of Public Health, responses to questionnaire, April 4, 1995.

[21] Mission Bay EIR, pp. VI.D.18-VI.D.19.

[22] Mission Bay EIR, p. VI.D.19.

[23] See the Hazardous Materials Ordinance (Article 21 of the Health Code) and the Hazardous Waste Generator Inspection Ordinance (Article 22 of the Health Code). A summary is provided in Section IV.M., Environmental Setting, Hazards and Hazardous Materials, pp. **344-345**.

[24] San Francisco Department of Public Health, Annual Report FY 1992/1993.

[25] Mission Bay EIR, p. VI.D.22.

[26] Pelayo, Joe, City Distribution, San Francisco Water Department, telephone conversation, April 5, 1995.

[27] Mission Bay EIR, p. VI.D.22-VI.D.24.

[28] Mission Bay EIR, pp. VI.D.24-VI.D.26, and interview with Gene Handa and Mohinder Khanna, DPW Clean Water Program, March 15, 1995.

[29] San Francisco Department of Public Works, "San Francisco's Combined Sewer Overflow Control Program," 1995.

[30] Kilstrom, Kari, Port of San Francisco to Alice Glasner, Planning Department, correspondence, August 9, 1995.

[31] Jones, Roberta, Port of San Francisco to Kari Kilstrom, Port of San Francisco, internal memorandum, August 7, 1995.

[32] Keller, Kris, Solid Waste Administration, CAO's Office, correspondence, March 27, 1995. "Disposed of" refers to the volume of material that went to landfill. Specific figures for amounts recycled are not available; however, the CAO's Office estimates that the City generates a total of about 1,027,170 tons on a yearly basis which includes material disposed of at the landfill and material recycled separately.

[33] Keller, Kris, Solid Waste Administration, CAO's Office, responses to a Planning Department questionnaire on March 20, 1995.

[34] Keller, Kris, Solid Waste Administration, CAO's Office, correspondence, March 27, 1995.

[35] Keller, Kris, Solid Waste Administration, CAO's Office, telephone conversation, July 31, 1995. The smaller volume accounts for general litter and trash pick-up from some short-term use of facilities. Most permanent tenants have their own solid waste collection.

[36] Keller, Kris, Solid Waste Administration, CAO's Office, telephone conversation, March 22, 1995. According to Ms. Keller's responses to a questionnaire on March 20, 1995, Golden Gate Disposal collects solid waste at Fisherman's Wharf, Northeast Waterfront, Ferry Building, up to China Basin, but not including Central Basin; and Sunset Scavenger collects solid waste in China Basin, including Central Basin south, and the Southern Waterfront.

L. ENERGY

LOCAL ENERGY SUPPLY AND DISTRIBUTION

The Project Area is within the service area of Pacific Gas and Electric Company (PG&E). PG&E produces electricity from both renewable and non-renewable resources, and plans to meet new demands for electricity with power derived from coal, nuclear and hydroelectric sources.[1] PG&E also plans to increase cogeneration and exploitation of geothermal resources, and to continue purchasing surplus hydroelectric power from the Pacific Northwest. PG&E obtains natural gas from Alberta, Canada, Texas and California.

Electricity

San Francisco obtains electricity from PG&E and from the municipally owned and operated Hetch Hetchy Water and Power system. PG&E supplies electricity to private residential, commercial and industrial customers; Hetch Hetchy provides power primarily for municipal operations.

Pacific Gas and Electric Company

Electricity is supplied to San Francisco from two local gas-fired power plants, Hunters Point and Potrero, with a total capacity of about 792 Megawatts (MW).[2] Interties with other portions of PG&E's service area and other utilities in the State enable the City to receive power from plants outside of San Francisco.

PG&E's total electrical capacity is about 20,373 MW, consisting of about 35 percent oil- or gas-fired plants; about 23 percent hydroelectric; about 11 percent nuclear; about 5 percent geothermal; about 6 percent pumped storage; and about 23 percent cogeneration, other sources, and purchases from other utilities.[3] PG&E purchases some electricity from other utilities, mostly inexpensive surplus hydroelectric power from Washington and Oregon. PG&E will continue purchasing surplus hydroelectric power as long as it is available and inexpensive. By 2011, according to forecasts prepared by the California Energy Commission (CEC), PG&E will need an additional 22,689 MW of capacity; load management will become an important consideration in minimizing peak demand for electricity.[3]

Hetch Hetchy Water and Power

Hetch Hetchy Water and Power, a municipally owned water and electric system, is operated by San Francisco under provisions of the Raker Act (38 Stats. 242, 1913). While recognizing certain pre-existing rights of the Modesto and Turlock Irrigation Districts, the Raker Act established the rights of San Francisco to obtain both water and power from the Tuolumne River.

Hetch Hetchy Water and Power Project generates electricity from three hydroelectric facilities on Tuolumne River and Cherry Creek in the Sierra Nevada. Total Hetch Hetchy capacity is 382.5 MW, generated by the Moccasin Powerhouse (104 MW), Holm Powerhouse (160 MW), Kirkwood Powerhouse (116 MW), and Low Head Power Plant (2.5 MW).[4] San Francisco receives Hetch Hetchy power via the PG&E transmission and distribution system.

Approximately 95 percent of the power generated by Hetch Hetchy is consumed by the City of San Francisco and the Modesto and Turlock Irrigation Districts, with about one-third of this going to San Francisco (including San Francisco International Airport and its tenants, the largest municipal consumer) and about two-thirds going to the Modesto and Turlock Irrigation Districts.[4] The remaining 5 percent is sold to miscellaneous "assigned" industrial customers.

Natural Gas

PG&E purchases, rather than produces, most of its natural gas. Its policy is to purchase first from non-California sources. This policy, which helps preserve California's natural gas in case of shortages, will continue as long as it is economical. PG&E receives about 55 percent of its natural gas from Canada, about 33 percent from the southwestern United States and about 12 percent from California.[5] About one-half of the gas used by San Francisco Municipal facilities is State-contracted from Texas and the other half originates from the above-stated PG&E mix of sources.[6]

Steam

PG&E sold the only district steam heating system to San Francisco Thermal. The steam system consists of natural-gas-fired boilers at two facilities, Stations S and T, and steam distribution lines serving portions of the Civic Center area.[6] Station S, built in 1913 at Sutter and Hyde Streets, has a capacity of 130,000 pounds of steam per hour and 1.5 miles of low-pressure distribution lines. Station T, built in 1924 at Sixth and Jessie Streets, has a capacity of

360,000 pounds of steam per hour and 10.5 miles of high-pressure distribution lines. The steam system supplies about one billion pounds of steam per year to about 170 commercial customers.[7]

Liquid Fuels

Private vehicles and public transit serving the Project Area, such as buses and CalTrain, purchase gasoline and diesel fuel from a variety of distributors in the San Francisco area.

ENERGY DEMAND AND CONSUMPTION

Electricity

Electricity constitutes about 57 percent of the energy consumed in the PG&E service area. Consumption is currently about 64,700 billion Watt-hours (GWh).[5] Peak demand, which determines PG&E's generation and distribution capacity, is about 14,831 MW; PG&E's reserve margin is about 8 percent of the peak demand.[5,8,9] A reserve margin of 5 percent or less triggers Statewide energy emergency plans.[5]

Commercial and industrial uses in the Project Area currently consume an estimated 112 million kilowatt-hours (kWh) of electricity, or about 1.12 trillion Btu, per year.[8,10,11] Most of this energy is used for industrial applications, including lighting and operation of power equipment for the production, maintenance, storage, and repair of goods and equipment. Some energy is consumed for commercial and office purposes; these uses consist primarily of lighting, heating, air conditioning, and computer operations.

Natural Gas

Natural gas use in the Project Area is about 1.17 billion cubic feet, or about 1.17 trillion Btu, per year.[5] Natural gas is used primarily for space and water heating, although the amount used for air conditioning is increasing. Consumption of natural gas in the PG&E service area is about 2,712 billion cubic feet per year.[5]

ALTERNATIVE ENERGY RESOURCES

The potential exists in the Project Area and vicinity for developing alternative, or unconventional, power sources such as cogeneration or solar energy collection systems.

Cogeneration, passive solar design and daylighting (use of sunlight to provide interior light) could reduce energy use in appropriately designed structures. The energy conservation potential in the waterfront also is a resource that will be affected by future development. For example, existing buildings represent large amounts of energy embodied in building materials and in construction.

ENERGY PLANS, POLICIES, AND REGULATIONS

The *California Energy Plan* is the State's principal energy planning and policy document.[12] According to the *Plan*, which recognizes the connections between energy use and air pollution, approximately 80 percent of the State's air pollution is caused by burning fossil fuels. The Plan finds that increasing energy efficiency is the lowest cost alternative for improving air quality.

Building energy consumption is regulated in California under the California Code of Regulations Title 24 Building Energy Efficiency Standards. The efficiency standards apply to new construction of both residential and non-residential buildings, and regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. In the Project Area, documentation showing compliance with these standards is submitted with the application for a building permit and is enforced by the Port of San Francisco.

Transportation-related energy consumption is not subject to specific controls, although the federal government has mandated fuel economy standards for domestic passenger automobiles including production targets for zero emission vehicles.

NOTES - Energy

1 California Energy Commission, *Biennial Report*, 1989.

2 Virdee, Avtar, Environmental Health and Safety Supervisor, PG&E, telephone conversation, January 1996.

3 California Energy Commission, *The 1992 California Electricity Report*, 1992.

4 Park, Laurie, Engineer, Hetch Hetchy Water and Power Department, telephone conversation, January 24, 1996.

5 California Gas and Electric Utilities, California Gas Report, 1994.

6 Chaimberlain, Bruce, Project Manager, San Francisco Bureau of Energy Conservation, telephone conversation, January 24, 1996.

7 Mayer, Richard, Plant Operator, San Francisco Thermal, telephone conversation, January 24, 1996.

8 This estimate was made on the basis of existing land uses and employment within the Project Area. (See Section IV.B., Environmental Setting, Land Use and Zoning, and IV.C., Environmental Setting, Population, Housing, and Employment, for information on existing conditions.)

9 Reserve Margin is the difference between the net system generating capacity at a given time, including down-time for maintenance, and the systems' maximum load (demand) requirements, including net scheduled transfer with other utilities, expressed as a percentage of the maximum demand.

10 One kilowatt-hour (kWh) is the basic unit of electric energy, equal to a demand of one kilowatt of power supplied steadily for one hour.

11 British thermal units (Btu) are units of heat energy. One Btu is the quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at sea level. All forms of energy can be converted to heat energy. Btu values given in this report are "at-source" values, which means that they have been adjusted to account for losses in energy that occur during generation and transmission of the various forms of energy, as specified in *Energy Conservation Design Manual for New Nonresidential Buildings*, Energy Resources Conservation and Development Commission, 1977; and *Energy and Transportation*, Apostolos, J.A., W.R. Shoemaker, and E.C. Shirley, 1978.

12 California Energy Commission, *The 1992-1993 Energy Plan*, 1991.

M. HAZARDS AND HAZARDOUS MATERIALS

REGULATORY SETTING

Hazardous materials and hazardous wastes are subject to numerous federal, State, and local laws and regulations intended to protect health and safety. The overall regulatory framework for hazardous materials is discussed in Appendix H. Two important local ordinances - San Francisco Public Works Code, Chapter 10, Article 20, "Analyzing the Soil for Hazardous Wastes" (the Maher Ordinance) and San Francisco Municipal Code, Article 21 (Health Code) (the Hazardous Materials Ordinance) - are summarized here.

Maher Ordinance

In 1986, the City of San Francisco established legislation that requires an investigation of hazardous wastes in soil at construction sites as a prerequisite for certain building permits. Ordinance #253-86 (the Maher Ordinance) imposes three major requirements on proposed developments:

- A site history report to describe past site uses;
- A soil analysis report that evaluates results of chemical tests; and
- A site mitigation report if the soil is contaminated.

The site history report and the soil analysis report, which must be performed by knowledgeable, certified professionals, provide information on historic and current hazardous waste contamination at the parcel to be developed. The reports are submitted to the Departments of Public Works and Public Health. Article 20 regulations take effect at the time of building permit application for projects located on filled land requiring excavation. The Article 20 investigation is required if:

(1) More than 50 cubic yards of soil are to be disturbed, and

(2) The project site is bayward of the historic high tide line (i.e., in an area of Bay fill), as designated on an official City map, or

(3) The site is at any other location in the City designated for investigation by the Director of the Department of Public Works.

Parcels qualifying under the third condition are places where the Director has reason to believe hazardous wastes are present, such as sites listed by a public agency, or sites known to have leaking underground storage tanks. San Francisco's Maher ordinance protects the health and safety of the City's workers, residents, and occupants from hazardous waste contamination. All of the land in the Project Area is built up on fill, so it is very likely that most, if not all, of the soils in the Project Area contain some concentrations of contaminants.

Hazardous Materials Ordinance

The Hazardous Materials Ordinance provides for safe handling of hazardous materials in the City. Any person or business that handles, sells, stores, or otherwise uses hazardous materials in quantities exceeding specified thresholds (e.g., 55 gallons or 500 pounds), is required by Article 21 of the San Francisco Municipal Code to register the hazardous materials with the Department of Public Health. Registration is documented by obtaining a Certificate of Registration from the City. Businesses using less than the specified threshold quantities must provide a disclaimer letter to that effect.

The Hazardous Materials Ordinance helps protect the health and safety of the general community and of emergency response personnel, such as fire fighters and paramedics. Data on hazardous materials use are stored in a Citywide computer system and can be made available to emergency responders in the event of an emergency. The information assists emergency responders to assess and resolve hazardous materials incidents quickly and safely. Inspections are performed by the City every one to two years or upon complaint.

The Hazardous Materials Ordinance helps San Francisco businesses to satisfy requirements of hazards communication and of community right-to-know laws. The registration process also helps businesses inventory and reduce the amounts of hazardous materials stored and hazardous wastes produced, and reduces overall risks posed to the community by these materials.

POTENTIAL SOURCES OF CONTAMINATION IN THE PROJECT AREA

Contaminated Fill

Prior to human settlement, parcels in the Project Area were part of the shallow margins of San Francisco Bay. Beginning in the 1850's, the waterfront was gradually filled with brick, wood, metal fragments, concrete, other rubble, debris, and sand. Other than information available on specific parcels as reported in the next section, the exact quality of fill throughout the Project Area is not known. Heterogeneous fill is partly responsible for the persistent soil contamination - especially from lead and other heavy metals - found at numerous development sites in San Francisco, and was one of the reasons for enactment of San Francisco's Maher Ordinance. (The Port of San Francisco conducts active maintenance dredging within the Waterfront Area. Contamination of Bay sediments is discussed in Section IV.J., Environmental Setting, Hydrology, and Water Quality, under Dredging, pp. 287-289.)

Identified Soil and Groundwater Contamination

Site reports available through the Port of San Francisco and the San Francisco Department of Public Works, including reports prepared to comply with the Maher Ordinance, were reviewed to identify known past or present environmental conditions within the Project Area. Underground storage tank reports available at the San Francisco Department of Public Health, Local Oversight Program were also reviewed. The reports were reviewed to identify the types of hazardous substances that were formerly or are currently at a site and to identify the extent of any hazardous substances. A summary of the information obtained for each site is included in Table H-1 in Appendix H and discussed below by subarea. The site locations are shown on Figures H-1 through H-7 in Appendix H.

The sites reviewed generally include those where a site investigation was required in accordance with the Maher Ordinance or underground storage tank investigation requirements of the City and County of San Francisco and the State of California; environmental conditions noted at these sites are discussed. Sites where the Port has observed abandoned wastes or conducted a site investigation for other reasons are also included in this summary. Abandoned wastes are a potential source of hazardous substances because they may have been spilled prior to being recovered by the Port. However, their presence does not necessarily indicate soil and/or groundwater contamination.

In many cases, the reports reviewed for this EIR were prepared for public utility projects or specific construction projects, and the extent of any sampling performed was designed to identify potential contaminants within the planned construction area; the investigation may not have identified the full extent of any contaminants identified. In addition, the records reviewed are not always complete and the current status of any site remediation may not always be available. The data provided for each site provide the information to identify potential impacts due to the types of contamination identified within the Project Area on a program level, but it is possible that remediation could have occurred at some of the sites. If development of a specific location within the Project Area is planned, it would be necessary to research the identified sites in more detail.

The Port also conducted numerous underground storage tank removals in 1987, and contamination identified during these removals is discussed below by subarea. In general, the Port did not identify the extent of contamination or conduct a site remediation. Further investigation and potentially remediation of these sites would be necessary prior to future construction.

Extensive information regarding previous land uses and the presence of underground storage tanks was obtained for the Waterfront Transportation Projects. Following the site history reviews, borings were drilled and sampled throughout much of the Project Area to evaluate soil and groundwater quality. The results of this sampling were incorporated into the information in Table H-1 in Appendix H to identify sites where contamination may be present. The site history summaries were also reviewed to identify where underground storage tanks may be present at potentially contaminated sites. Reports prepared for the Waterfront Transportation Projects would provide additional detailed information to be considered for many future construction projects. Sampling during the Waterfront Transportation Projects was sufficient to identify whether contamination was present in the areas sampled. Any contamination identified may be present as a result of contamination from nearby sites or it may be associated with fill materials used in the area sampled.

Strict criteria for the identification of contamination are not available. The levels of chemicals identified in the soil or groundwater are typically compared to background, or naturally occurring, levels to determine whether a site has been contaminated. Because most organic chemicals such as petroleum products or volatile organic compounds are not naturally occurring, their presence in the soil or groundwater can be considered an indication of contamination. Other compounds such as metals, however, are naturally occurring and their concentrations need to be compared to background levels to identify potential contamination. In the absence of background levels of metals for this program level evaluation, metals concentrations in the soil have been compared to hazardous waste criteria to identify potential contamination. Similar criteria do not exist for groundwater, and data regarding the metals levels in the groundwater at specific sites would need to be more thoroughly reviewed to identify potential contamination by metals.

A summary of available hazardous materials information by WLUP subarea follows. The summary describes the hazardous materials that have been identified at each site to determine areas where contamination may be present and restrict future development possibilities. The levels of contaminants identified at each site should be evaluated as part of planning for future projects to identify the project-specific constraints due to the presence of hazardous materials. The severity of contamination within each subarea depends on many factors and cannot be addressed on the basis of the information identified in this EIR

In many cases, abandoned wastes or contamination were reported on a pier or a seawall lot. In this case, the entire pier or seawall lot was indicated on figures showing site locations. This does not indicate that the entire pier or seawall lot was surveyed, only that hazardous materials were located on at least a portion of the pier or seawall lot.

In general, the potential for soil and/or groundwater contamination is greater at the seawall lots because these sites are underlain by fill materials or natural soils. Where soil contamination has occurred, the potential impacts related to the hazardous materials would generally be restricted to the site. However, if groundwater contamination has occurred, contaminant plumes could extend off-site and affect other nearby sites. Because of this, sites adjacent to the Project Area were reviewed for their potential to affect groundwater quality within the Project Area. Only those sites with the potential to affect groundwater quality within the Project Area are identified below.

Fisherman's Wharf Subarea

Four sites were identified within this subarea and two sites adjacent to the subarea were reviewed (Figure H-1 and Table H-1, Appendix H). Fish Alley and Pier 45 (Sites 2 and 3) are included because abandoned wastes have been identified; the information available indicates that the potential for soil and/or groundwater contamination has not been investigated at these sites. Elevated levels of lead were identified in the soil at Pier 39 (Site 6). General Petroleum Resources, the Metro Parking Garage, and the Muni Kirkland Bus Yard (Sites 1, 4, and 5) have undergone site investigations and free product[1] has been identified on the groundwater at each site. Soil and groundwater contamination by petroleum products and polynuclear aromatic hydrocarbons has been documented. The Metro Parking Garage and Muni Kirkland Bus Yard are located outside of the subarea but have the potential to affect groundwater quality within the subarea if contamination extends off-site. Off-site contamination has been documented at the Muni Kirkland Bus Yard and is possible at the Metro Parking Garage. Off-site contamination has also been documented at the General Petroleum Resources site which is located within the subarea. In addition, there was previously a PG&E coal gasification plant in the same location as the Metro Parking Garage. This previous plant was a potential source of polynuclear aromatic hydrocarbons, benzene, ammonia, cyanide, and hydrogen.

Northeast Waterfront Subarea

The review of available information identified 11 sites within this subarea, and one site (Site 18) for which the exact location is unknown (Figure H-2 and Table H-1, Appendix H). Petroleum hydrocarbons were identified in the railroad ballasts at Piers 33, 29/31, 23, 15, 9, and 1101 Embarcadero (Sites 8, 10, 12, 14, 15, and 18). Sampling of the ballasts was performed to evaluate the ballasts for disposal. Low levels of petroleum hydrocarbons were identified in the ballasts and there is the potential that the presence of hydrocarbons could result in contamination of the underlying soil. The potential for major contamination is considered low on the basis of the low levels of petroleum hydrocarbons identified in the soil samples. Soil and/or groundwater contamination was identified at Seawall Lots 314, 316, 321 and 324 (Sites 7, 9, 13 and 16) during the Waterfront Transportation Projects. Site investigations have been conducted at Seawall Lots 318 and 323 (Sites 11 and 17). There are two underground storage tanks located at Seawall Lot 318, near the intersection of Lombard Street and The Embarcadero (Beltway Railway Fuel Tanks, Site 11); in addition, one boring was installed near this site during the Waterfront Transportation Projects. Sampling for these investigations identified soil contamination by petroleum products, polynuclear aromatic hydrocarbons, and lead at Seawall Lot 318. Petroleum products were also identified in the groundwater. The investigation conducted at Seawall Lot 323 (Site 17) identified soil contamination by petroleum products, polynuclear aromatic hydrocarbons, and lead.

Ferry Building Subarea

Seven sites were identified within this subarea and one site adjacent to the subarea was reviewed (Figure H-3 and Table H-1, Appendix H). Pier 5, Pier 3 and the Ferry Building (Sites 20, 21, and 22) are included because abandoned wastes have been identified. Sampling during the Waterfront Transportation Projects identified soil and/or groundwater contamination at Seawall Lot 351, the Muni Metro Turnaround, and Seawall Lot 327 (Sites 19, 23, and 26); the chemicals dentified include petroleum products, semivolatile organic compounds, volatile organic compounds, metals, and asbestos. Underground storage tanks were removed from Pier 5, the Ferry Building, and Seawall Lots 346/347.5 (Sites 20, 22, and 24); soil contamination by petroleum products was identified in the soil at the Ferry Building and Seawall Lots 346/347.5; he groundwater also contained petroleum products at Seawall Lots 346/347.5. The soil and groundwater quality was not assessed at Pier 5 (Site 20) where one underground storage tank was emoved from a concrete vault. An additional site (Site 25), located on Folsom Street outside of he Project Area, underwent a site investigation, and a black viscous fluid was identified on the groundwater surface. Petroleum products, polynuclear aromatic hydrocarbons, volatile organic compounds, dibenzofuran, and metals were identified in the soil at this site. Groundwater quality at this site could affect groundwater quality within the subarea if contamination extends off-site.

South Beach / China Basin Subarea

Twenty-five sites were identified within this subarea and three sites outside of the subarea were reviewed (Figures H-4 and H-5 and Table H-1, Appendix H). Piers 26, 28, 30, 32, Dodds Fumigation, and Piers 46/46B, 48, 50/50A, 54, 56, and 64 (Sites 29, 30, 31, 32, 41, 43, 45, 48, 49, 50, and 52) are included because abandoned wastes have been identified. Sampling during the Waterfront Transportation Projects identified soil and/or groundwater contamination at Seawall Lots 328, 329/330, 331, 332 and Pier 36 (Sites 27, 33, 34, 35 and 36); the chemicals identified include petroleum products, semivolatile organic compounds, volatile organic compounds, and metals. Underground storage tanks were removed from Seawall Lot 332, Pier 38, Pier 40, Seawall Lot 333, Pier 46/46B, H & H Ship Services, 145 China Basin, 300 China Basin, 300 Sixteenth Street, Seawall Lot 340, and the Esprit De Corp facility at 499 Illinois Street (Sites 35, 37, 38, 39, 43, 44, 46, 47, 52, 53, and 54); petroleum products were commonly identified in the soil and groundwater at these sites. Floating product was identified at Seawall Lot 340 and the Esprit De Corp store. The extent of product in this area has not been characterized.

Lead was identified at levels greater than hazardous waste criteria in the roofs of Piers 24, 26, and 28 (Sites 28, 29, and 30). The source of the lead is believed to be from Caltrans maintenance operations on the Bay Bridge. The shed at Pier 24 was demolished in 1992 and soil containing lead was removed from the roof at that time. Removal of soil containing lead at Piers 26 and 28 and two adjoining annexes was conducted in 1995.

Site investigations have also been conducted at Seawall Lot 333, the Berry Street Property along King Street (Caltrans site), Seawall Lot 334, and the Esprit De Corps store (Sites 39, 40, 42, and 54). Soil contamination by petroleum products, semivolatile organic compounds, volatile organic compounds, and metals as well as groundwater contamination by petroleum products, semivolatile organic compounds, and volatile organic compounds were identified. The sites located at 300 Sixteenth Street, Seawall Lot 340, and the Esprit De Corp Store (Sites 52, 53, and 54) are located outside of the subarea but have the potential to affect groundwater quality in the subarea if contamination extends off-site. Seawall Lot 334 and the Berry Street Property

(Sites 39 and 40) were previously coal gasification plants. Asbestos and lead were identified in the building materials of several buildings at the Berry Street Property (Site 40).

Site 44 on Seawall Lot 337 is H&H Ship Services. Soil and groundwater contamination by petroleum products was identified as a result of underground storage tank removal activities at the site. This facility recycles waste oil/water mixtures and is a tank cleaning facility. Closure of the Treatment/Transfer Area of the facility is planned. Twelve above-ground storage tanks have been removed, and soil and groundwater sampling has been conducted to identify any soil and/or groundwater contamination related to the Treatment/Transfer Area; preparation of a report is underway. One underground storage tank remains in place at this site.

Sampling conducted at the Crowley Marine Services Facility (Site 49) indicates that lead, polynuclear aromatic hydrocarbons and organotin[2] compounds are present at levels above background in the sediments near the site; soil and groundwater quality have not been addressed. In addition, asbestos-containing materials have been identified in pipeline insulation and mastic at this site.

Southern Waterfront Subarea

Nine sites were identified within this subarea and three sites adjacent to the subarea were reviewed (Figures H-6 and H-7 and Table H-1, Appendix H). Abandoned wastes have been identified at the Pier 70 landfill, PG&E Potrero Power Plant (located outside of the subarea), Union Pacific Army Street Site, Pier 80, Grannex Facility at 1301 Army Street, Pier 88, Pier 90, Pier 94, and Pier 96 (Sites 55, 56, 57, 58, 59, 61, 62, 63, and 64). Underground storage tanks were removed from Pier 80 (Site 58), and petroleum products were identified in the soil and groundwater. A film of an oily substance was identified on the groundwater during underground storage tank removal activities at this site.

There are three landfills within this subarea that are undergoing closure under a regulatory order from the Regional Water Quality Control Board at Pier 70, Pier 94, and Pier 98 (Sites 55, 63, and 65); these landfills are described in more detail below. Underground storage tanks were removed from the vicinity of the Pier 70 landfill and soil contamination from the tanks has been identified. Two soil treatment facilities that use bioremediation to treat nonhazardous soil containing petroleum hydrocarbons at Seawall Lots 344 and 344c (Sites 62 and 63) are also located within this subarea. In addition, part of Site 63 contains stockpiled concrete and asphalt produced from the demolition of the Embarcadero Freeway. Operations to recycle these materials have ceased.

At the Western Pacific Army Street site (Site 57), petroleum products, polynuclear aromatic hydrocarbons and metals were identified in the soil, and the groundwater was found to be affected by petroleum products, polynuclear aromatic hydrocarbons and volatile organic compounds. In addition, the off-shore sediments were found to contain polynuclear aromatic hydrocarbons and metals.

The Grannex Facility on Seawall Lot 354 (Site 59) is a former copra (coconut oil) processing facility. The soil has been contaminated by oil and grease, petroleum products, volatile organic compounds, polychlorinated biphenyls (PCBs), asbestos, and combustible gases. The groundwater has been affected by petroleum products. In addition, an above-ground tank farm was previously located on this site. Federated-Fry Metals (Site 60) is located outside of the subarea adjacent to this site; petroleum products, polynuclear aromatic hydrocarbons, volatile organic compounds, polychlorinated biphenyls, metals and asbestos have been identified in the soil at Federated-Fry Metals and the groundwater was found to contain semivolatile organic compounds which could affect groundwater quality in the subarea if contamination extends off-site.

Soil was found to be contaminated with petroleum products, polynuclear aromatic hydrocarbons, volatile organic compounds, oil and grease, cyanide, and metals at the East India Basin Business Park (Site 66). Groundwater contamination by petroleum products and semivolatile organic compounds was also identified at this site. A slag pile at this site also contained chemicals, including low levels of polychlorinated biphenyls. Only low levels of benzene, toluene, ethylbenzene and xylenes were identified in the soil at Pier 90 and Seawall Lot 344c (Site 62); the likely source is considered to be surface spills from vehicles.

The PG&E Potrero Power Plant is also included in this section. It is outside of the subarea but adjacent to Pier 70. Soil contamination has been documented at this site and free product has been observed on the groundwater. This is also the site of a previous coal gasification plant. Contaminated soil or groundwater from this site could affect construction projects at nearby sites within the Project Area.

Other Sources of Contamination

Due to the extensive history of maritime land uses and the use of hazardous substances in the waterfront area, it is likely that additional sites having contamination not yet identified or reported to regulatory agencies could be within the Project Area. Other potential sources of contamination are RCRA generators (i.e., permitted hazardous waste generators) and underground storage tanks, both of which are known to be in the Project Area. Underground storage tanks are commonly used to store fuels and other hazardous materials, and a relatively high percentage of older underground storage tanks have leaked at some point in their lifetime. Sites occupied by hazardous waste generators frequently are contaminated from leaks or spills. In addition to these sources of contamination, structures can be contaminated with building materials such as asbestos, old electrical equipment containing PCBs, and lead-based paint. Regulation of these materials is discussed in Appendix H.

Various agencies maintain lists of "environmentally impaired" properties. The agency-listed sites are not necessarily contaminated nor hazardous, but are included according to specific agency criteria. (Some, for example, had past spills that have been cleaned up; others have businesses that generate or store hazardous materials or wastes.) All sites in the Waterfront Land Use Plan area that are listed by State and federal agencies were identified and mapped in a Special Vista Report.[3] This report is on file at the San Francisco Planning Department and is included in this EIR by reference. (There is substantial overlap between the information in the Vista Report and the information presented in Table H-1 [which came from agency files]. However, the Vista Report includes a number of sites that are not listed in Appendix H, for the reasons listed previously. Conversely, Appendix H may list some sites that are not in the Vista Report.) Other contaminated parcels may be identified through the Maher investigations that would be required for future construction activities or through identification or closure of underground storage tanks that may be present within the Project Area.

Status of Ongoing Landfill Closures

The last major areas filled by the Port in the late 1960's and early 1970's were at Pier 98, Seawall Lot 352 (near Pier 94), and Pier 70, and were designated as Class III landfills by the Regional Water Quality Control Board. They are identified as Sites 55, 63, and 65 in Table H-1 and on Figures H-6 and H-7 (Appendix H). These landfills contain construction debris such as concrete, asphalt, rebar, brick, glass, wood debris, and metal debris along with incidental amounts of hazardous materials.

In 1987, these landfills became subject to closure order by the Regional Water Quality Control Board (RWQCB). The requirements for closure prevent the Port from placing any additional material on these sites except as approved by the RWQCB. In accordance with the closure order, the groundwater monitoring wells in place at the landfills must continue to be maintained and sampled into the future. The Port is required to monitor groundwater and surface water at each landfill on a quarterly basis both before and after completing closure to observe for potential water quality degradation occurring from the landfills.

Closure of these landfills will involve placement of clean fill and paving or other engineering controls to prevent infiltration of rainwater into the fill area and possible transfer of contaminants from the landfills to the groundwater and the Bay. Interim and permanent land uses on adjoining land areas are carefully reviewed by the Port and are required to meet similar standards for pollution control. The total cost estimate for closure of these landfills is $10 million. Steps remaining in the closure design process for the landfills at Pier 98, Seawall Lot 352, and Pier 70 are outlined below.

Pier 98 will be developed as a wetlands enhancement area. The Port is in the process of preparing the park and wetland design plan which will be submitted to the RWQCB for acceptance.

At Seawall Lot 352, formerly called Pier 94 in the closure order, the preliminary closure plan is being modified to allow the site to be graded in terraces such that each terrace would not have a slope greater than one percent. With this configuration, the site can be used as a container storage area. The Port is also studying the feasibility of developing a phased closure plan that would allow development of interim land uses at the landfill until the funds for final closure become available.

The closure plan for Pier 70 will require revision, as a greater area of pavement slumping now exists at the site than originally observed when the preliminary closure plan was prepared.

NOTES - Hazards and Hazardous Materials

[1] Petroleum products such as gasoline and diesel do not mix with water when in their pure form. Because they are lighter than water, they will float on the groundwater surface. "Free product" is the term used to describe petroleum that is found in a separate layer at the top of the water table. The presence of free product is an indicator of a substantial petroleum leak.

[2] Toxic organotin compounds formerly were added to paints applied to boat bottoms to prevent accumulation of algae and other plant life. Use of these compounds in paints has generally stopped because of their toxicity to aquatic life.

[3] Vista Environmental Information, Inc., Vista Special Report #6/056347-001, San Francisco Waterfront, October 14, 1994.

N. HISTORIC ARCHITECTURAL RESOURCES

The current physical configuration of the San Francisco Waterfront is the result of filling and construction over a 150-year period, from the pre-Gold Rush era to today. During that period, which notably included construction of the Old Sea Wall in 1868 and the New Sea Wall in 1878-1915, the architecture of the area evolved from a conglomeration of wharves and vernacular wood frame buildings, to include brick commercial structures, massive bulkheads, piers and pier sheds, and the metal structures associated with contemporary maritime industry. (For more about the history of the waterfront, the old and new sea walls, and other potential buried resources, see the discussion of archaeological resources, Section IV.O., Environmental Setting, Archaeological Resources, pp. 337-363.)

Over 20 individual structures, groups of structures, and districts within the Waterfront Land Use Plan (WLUP) Project Area have been designated, rated, or otherwise recognized by formal and informal historic resources surveys as important or potentially important historic architectural resources. Though no previous survey has undertaken an evaluation of the entire waterfront, certain past efforts have considered a majority of the area, including most parts of the Fisherman's Wharf, Northeast Waterfront, Ferry Building, and South Beach/China Basin subareas. These previous survey efforts, which used a variety of methodologies and evaluation criteria, are described below, along with additional research efforts undertaken to provide background for this EIR by supplementing existing survey information south of China Basin. Existing designations and ratings resulting from these surveys are also described below.

EXISTING SURVEYS

The San Francisco Department of City Planning conducted a Citywide inventory of architecturally significant buildings from 1974 to 1976. The inventory assessed the architectural significance of 10,000 surveyed structures Citywide from the standpoint of overall design and particular design features. Both contemporary and older buildings were included and each building was numerically rated according to its overall architectural significance. The ratings ranged from a low of "0" to a high of "5." The DCP survey rated about 20 buildings within the WLUP Project Area.[1]

The Foundation for San Francisco's Architectural Heritage (Heritage) has undertaken architectural surveys of downtown, South of Market areas, and the waterfront north of China Basin Channel. Within the Project Area, Heritage has rated about 20 structures.[2]

A 1983 historic property survey report for the I-280 Transfer Concept Study prepared by the California Department of Transportation (Caltrans) considered that project's "Area of Potential Effect" using criteria of the National Register of Historic Places (National Register). The State Historic Preservation Officer (SHPO) concurred with the report's recommendations regarding structures and districts that appear eligible for the National Register. Waterfront resources addressed include the Pier 1-5 pierhead and bulkhead buildings.[3]

In 1990, a student working with available archival materials and under the supervision of the Foundation for San Francisco's Architectural Heritage prepared a brief history of the San Francisco waterfront, along with an inventory of buildings and structures along the water. This unpublished history and inventory, called "On the Waterfront of San Francisco," includes 17 piers, 20 pier sheds, 20 bulkhead buildings, and three other structures. A majority of these structures are identified as contributing to a potential historic district stretching from Pier 45 to Pier 48.[4] Information gathered during this survey effort has been reviewed and accepted by Planning Department staff as a valuable addition to other information sources about architectural resources along the waterfront.

Also in 1990, a historic property survey report for the Embarcadero Surface Roadway Project prepared by the City's Department of Public Works in cooperation with Caltrans considered that project's "Area of Potential Effect" using criteria of the National Register. The SHPO concurred with some of the report's recommendations regarding structures and districts that are potentially eligible for the National Register, and determined that other structures did not appear eligible for the Register. Specifically, the SHPO determined that remains of the beltline railway did not appear eligible for the National Register due to a loss of integrity, and also determined that Art Deco industrial buildings near Berry and King Streets (including Pier 46B) do not constitute an historic district which appears eligible for the National Register.[5]

Historic architectural resources surveys were performed prior to adoption of several area plan elements of the San Francisco Master Plan. As a result, these area plans, including the Downtown Plan, South of Market, the Northeast Waterfront, and Mission Bay plans, which include or abut waterfront properties, recognize and list buildings and districts of note. Generally, these structures or districts are identified as worthy of retention, and/or worthy of future study and potential designation. In some cases, structures and districts identified in Master Plan elements are also afforded protection under Article 10 or Article 11 of the City Planning Code. Waterfront resources included in the San Francisco Master Plan and/or

Article 10-11 of the City planning code include the Northeast Waterfront Historic District, the Ferry Building, the Beltline Railroad Roundhouse, and the Third Street Bridge.

As part of efforts to update and establish planning policies and objectives for the Fisherman's Wharf area, the Planning Department has identified structures within the vicinity that are 50 years old or older, and is preparing a cultural resources component for inclusion in a draft area plan. Though completion of the draft area plan is not currently funded or programmed, preliminary drafts of the cultural resources component identify "contributory," "non-contributory," and "contributory-altered" buildings in the area. No potential historic district has been identified, and "contributory" buildings are those which define the general historic character of the area.[6]

The ongoing environmental analysis of alternatives to replacement of the Embarcadero Freeway and the freeway ramps referred to as the Terminal Separator Structure incorporates a historic architectural resources survey of that project's "Area of Potential Effect" using National Register criteria. The SHPO has reviewed and concurred with some of the recommendations regarding potential eligibility for the National Register contained in that survey report. Waterfront resources identified include only those previously listed in the National Register, determined eligible, or determined by the SHPO to appear eligible; these include the Ferry Building, the Agriculture Building, and the Pier 1-5 pierhead and bulkhead buildings.[7]

SOUTHERN WATERFRONT SURVEY

Additional research was conducted as background to this EIR in order to identify potentially significant resources in the area south of China Basin, since little information was available in the form of previous historic architectural resources surveys. The resulting historic resources report prepared by Carey and Co. describes about 50 buildings and structures which were evaluated using National Register criteria. Five buildings were identified by reviewers as potentially eligible for individual listing on the National Register, and 24 were identified as potentially eligible as part of a historic district referred to as "San Francisco Yard" and centered around the intersection of Twentieth and Michigan Streets. (See discussion of potentially significant resources, below.)[8]

Two structures within the survey area, the Third Street Bridge and the Fourth Street Bridge, were previously determined eligible for the National Register. The Third Street Bridge is also a San Francisco Landmark.

SIGNIFICANT RESOURCES WITHIN AND ADJACENT TO THE PROJECT AREA

Tables 21 and 22, p. 328 and p. 329, list, respectively, all structures and districts within or adjacent to the Project Area that have been formally designated as architecturally or historically significant at the local, State, and/or federal level, or have been determined to appear eligible for federal listing by the SHPO. These resources are considered significant for the purposes of this EIR. Buildings that have not been formally designated at the local, State, and/or federal level may be potentially significant, as described below, and survey ratings (from the DCP 1976 Survey and the Heritage Survey, for example) are provided in Appendix I for informational purposes.

The structures and districts with the greatest degree of recognition *and* protection are those which have been designated in Article 10 of the City Planning Code as San Francisco Landmarks or Historic Districts, or those which have been recognized as "Significant" or "Contributory" buildings in Article 11 of the City Planning Code. Three City Landmarks are located within the Project Area; seven additional Landmarks and one "Significant" (Category II) building are located in blocks adjacent to the Project Area. In addition, portions of the locally designated Northern Waterfront Historic District are located within the Project Area, and portions lie immediately adjacent to the area. Portions of the locally designated South End Historic District also lie adjacent to the Project Area.[9]

In addition to locally designated structures and districts, there are structures and districts within and adjacent to the Project Area that have been listed in the National Register of Historic Places, formally determined eligible for listing, or determined by the SHPO to appear eligible for listing. The California Register of Historical Resources, created in 1992, currently includes properties which have been formally determined eligible for, or listed in, the National Register of Historic Places.[10]

Both the National Register and the California Register afford official recognition to designated resources, and provide some measure of protection from impacts associated with federal- or State-funded projects. Rehabilitation tax credits and other preservation incentives may also be

TABLE 21: SIGNIFICANT RESOURCES WITHIN THE PROJECT AREA

Resource Name	Existing Designations	Plan Subarea
Resources within the Project Area		
Hyde Street Pier including Tubbs Cordage Co. and historic ships (*Star of Alaska, Balclutha, Alma, Eureka, Hercules, Wapama, Lewis Ark, CA Thayer, Eppleton Hall*)	National Register California Register Maritime State Historical Monument/ Maritime National Historical Park	Fisherman's Wharf
Historic ships including SS *Jeremiah O'Brien*, USS *Pampanito*, and *Santa Rosa*	National Register California Register	Various
Beltline Railroad Roundhouse	National Register California Register San Francisco Landmark No. 114	Northeast Waterfront
Northeast Waterfront Historic District (Portion, on SWL 321, 322, 322-I, 323, and 324)	San Francisco Historic District The District, with slightly different boundaries, Appears Eligible for the National Register (per SHPO)	Northeast Waterfront
Pier 1-5 Pierhead and Bulkhead Buildings	Appears National Register Eligible (per SHPO)	Ferry Building
Union Ferry Terminal (Ferry Building)	National Register California Register San Francisco Landmark No. 90	Ferry Building
Ferry Station Post Office (Agriculture Building)	National Register California Register	Ferry Building
Fireboat House/Pier 22.5	National Register Eligible California Register	Ferry Building
Pier 38 Pierhead Building	National Register Eligible California Register	China Basin
Third Street Bridge	National Register Eligible California Register San Francisco Landmark No. 194	South Beach/ China Basin
Fourth Street Bridge	National Register Eligible California Register	South Beach/ China Basin

SOURCE: San Francisco City Planning Code; California Office of Historic Preservation: Inventory of National Register Properties in San Francisco, June 29, 1994; Caltrans I-280 Transfer Concept HPSR.

TABLE 22: SIGNIFICANT RESOURCES ADJACENT TO THE PROJECT AREA

Resource Name	Existing Designations	Plan Subarea
Resources in Blocks Adjacent to the Project Area		
Aquatic Park Historic District	National and California Registers	N/A
Haslett Warehouse 680 Beach St., at Hyde St.	National and California Registers San Francisco Landmark No. 59	N/A
Gibb-Sanborn Warehouse 855 Front St.	San Francisco Landmark No. 91	N/A
Gibb-Sanborn Warehouse 901-21 Front St.	San Francisco Landmark No. 92	N/A
Northeast Waterfront Historic District (Portion)	San Francisco Historic District - Appears National Register Eligible (per SHPO)	N/A
Italian Swiss Colony Bldg. 1265 Battery St.	San Francisco Landmark No. 102	N/A
Independent Wood Co. Bldg. 1105 Battery St.	San Francisco Landmark No. 104	N/A
Audiffred Building 1-21 Mission St.	National and California Registers San Francisco Landmark No. 7	N/A
YMCA Building 166 The Embarcadero	San Francisco Category II Building National Register Eligible California Register	N/A
Hills Brothers Coffee Bldg. 2 Harrison St.	National Register Eligible California Register San Francisco Landmark No. 157	N/A
SF/Oakland Bay Bridge	National Register Eligible California Register	N/A
Southern Pacific Warehouse 126 King St. and 115-23 Townsend St.	National Register Eligible California Register	N/A
Castle Brothers Warehouse 128 King St.	National Register Eligible California Register	N/A
South End Historic District	San Francisco Historic District Appears Eligible for the National Register (per SHPO)	N/A

SOURCE: San Francisco City Planning Code; California Office of Historic Preservation: Inventory of National Register Properties in San Francisco, June 29, 1994; Caltrans I-280 Transfer Concept HPSR.

available to owners of listed buildings. Seven structures within the Project Area have been listed on or determined eligible for the National Register and/or the California Register: the Ferry Building, the Agriculture Building, the Beltline Railroad Roundhouse, the Fireboat House/Pier 22.5, the Third Street Bridge, the Fourth Street Bridge, and the Pier 38 pierhead building. One group of structures, the Pier 1-5 pierhead and bulkhead buildings, has been determined to appear eligible for National Register Listing by the SHPO. Six buildings on blocks adjacent to the Project Area have also been listed or determined eligible. (Many of these buildings are also local Landmarks.) Historic districts such as Aquatic Park have also been listed on or determined eligible for the National Register and/or the California Register.

In addition to the resources listed in Tables 21 and 22, p. 328 and p. 329, respectively, the State Office of Historic Preservation lists Pier 16, Pier 42, and the Eagle Cafe (now on Pier 39) and "North Point Pier Facades" as eligible for the National Register, although these resources have been demolished or moved since their eligibility determinations. The data base also lists ships berthed in the Project Area, including the SS *Jeremiah O'Brien* (temporarily berthed at Pier 30-32), and the USS *Pampanito* (at Pier 45).

OTHER POTENTIALLY SIGNIFICANT RESOURCES WITHIN THE PROJECT AREA

As described above, historic architectural resources surveys of the Project Area and surrounding blocks have identified structures and districts which lack official status at the local, State, or national level. While not formally designated, the individual structures identified are considered potentially significant, and fall into two primary groups: the first is the San Francisco Yard district identified in the Southern Waterfront Survey described above; and the second is the waterfront (primarily pier and bulkhead) structures located along the waterfront from Pier 45 (Fisherman's Wharf subarea) to Pier 48, just south of China Basin. Both of these groups are described below. For informational purposes, Appendix I contains a comprehensive list of all existing survey ratings, including those resulting from the Southern Waterfront Survey.

The San Francisco Yard

Located on Potrero Point, a natural land mass supplemented by fill and piers, the San Francisco Yard has been the site of iron works and ship building since the late 1860s. Also known as "Union Iron Works," which was the name of an early business on the site, the Yard currently includes 24 structures dating from c. 1883 to 1945, and is centered along Twentieth Street, which forms the east-west spine of the Yard and provides access from the land side.[11]

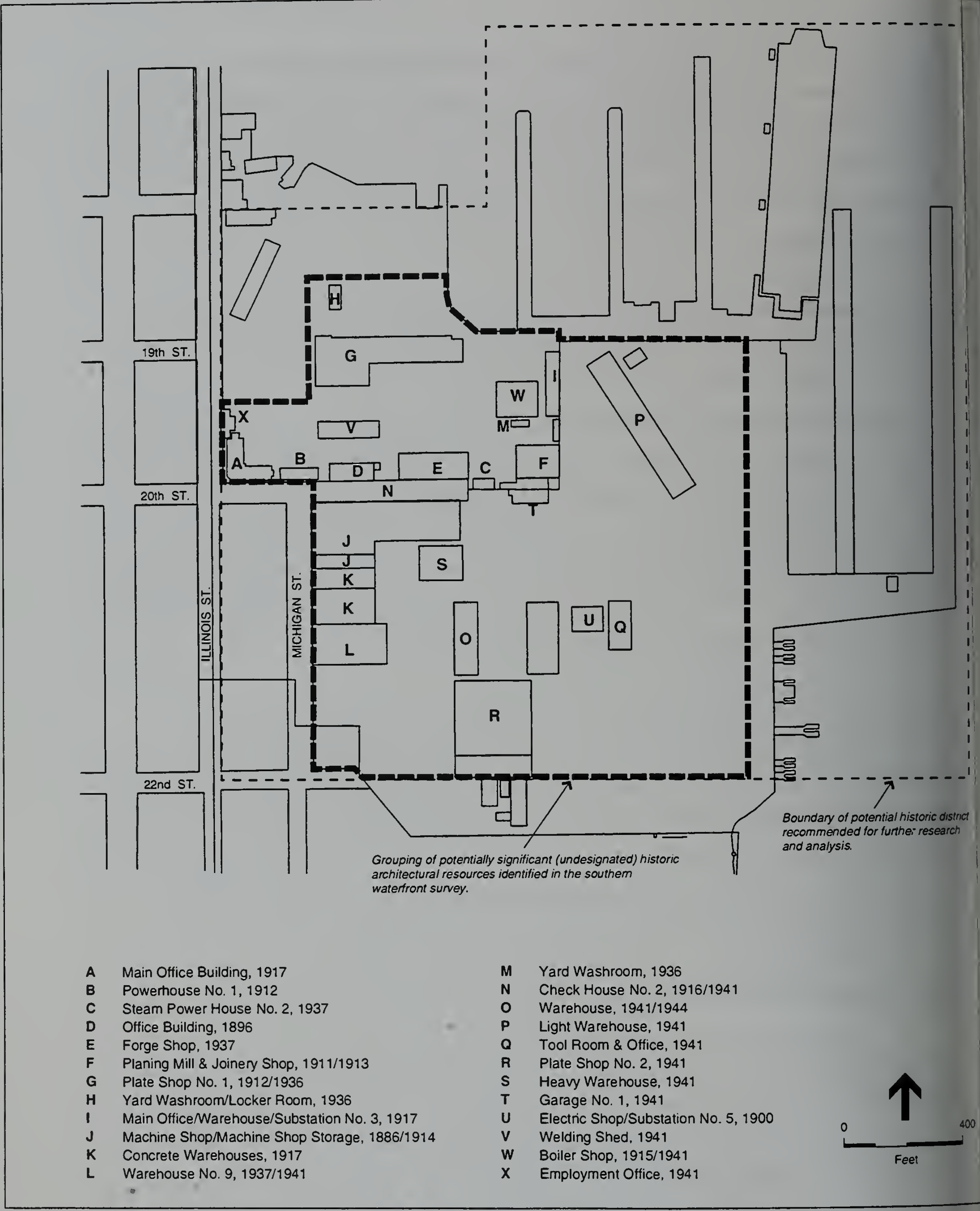
According to the Southern Waterfront Survey, the San Francisco Yard appears eligible for the National Register as a historic district because of its contribution to three war efforts (the Spanish American War, World War I, and World War II), and because of its importance as one of San Francisco's surviving early industrial plants. According to the Survey, some of the buildings in the Yard also appear individually eligible for the National Register based on architectural merit.

Heavy industry first located in the vicinity of the San Francisco Yard in 1867, when Pacific Rolling Mills was established. Pacific Rolling Mills was later absorbed by Risdon Iron and Locomotive Works, and then, in 1911, by Bethlehem Steel. "Union Iron Works moved to the north side of Potrero Point in 1883, and by the 1890s was competing with the biggest shipyards in the world. Union Iron Works provided the flagship *Olympic*, that carried Admiral George Dewey to the Philippines during the Spanish American War. In 1902, Union Iron Works was sold to U.S. Shipbuilding, and in 1905, to Bethlehem Steel. The Yard continued under Bethlehem Steel until 1949. During Bethlehem's tenure, the Yard was a major ship provider to both World Wars.... Architecturally, the Yard forms a cohesive grouping of industrial and administrative buildings, none of which post-date World War II."[12]

A map of the Yard is provided in Figure 45, which shows the potential historic district boundaries, along with the name and location of structures contributing to the district's significance. A variety of piers, slips and drydocks form the southern and eastern boundaries of the Yard along San Francisco Bay, while a tall c. 1900 cast iron fence surrounds the Yard on Illinois Street. The Landmarks Preservation Advisory Board has initiated the landmark designation process for four individual buildings within the Yard (Power House No. 1, Administration Building, Main Office Building, and Machine Shop).

The Waterfront, from Pier 45 to Pier 48

Stretching along the waterfront from Pier 45 to Pier 48, with several gaps, there is a string of significant (previously designated) and potentially significant resources which includes "finger piers," pierhead and bulkhead buildings, and other structures dating from 1908 to 1936. These years represent the second historical phase of waterfront development, which was distinguished by completion of the "New" Sea Wall, implementation of other improvement plans, and completion of all but a few of the pier and bulkhead buildings that remain today. The State



Grouping of potentially significant (undesignated) historic architectural resources identified in the southern waterfront survey.

Boundary of potential historic district recommended for further research and analysis.

A	Main Office Building, 1917	M	Yard Washroom, 1936
B	Powerhouse No. 1, 1912	N	Check House No. 2, 1916/1941
C	Steam Power House No. 2, 1937	O	Warehouse, 1941/1944
D	Office Building, 1896	P	Light Warehouse, 1941
E	Forge Shop, 1937	Q	Tool Room & Office, 1941
F	Planing Mill & Joinery Shop, 1911/1913	R	Plate Shop No. 2, 1941
G	Plate Shop No. 1, 1912/1936	S	Heavy Warehouse, 1941
H	Yard Washroom/Locker Room, 1936	T	Garage No. 1, 1941
I	Main Office/Warehouse/Substation No. 3, 1917	U	Electric Shop/Substation No. 5, 1900
J	Machine Shop/Machine Shop Storage, 1886/1914	V	Welding Shed, 1941
K	Concrete Warehouses, 1917	W	Boiler Shop, 1915/1941
L	Warehouse No. 9, 1937/1941	X	Employment Office, 1941

SOURCE: Environmental Science Associates, Carey & Co. Inc.,
San Francisco Planning Dept.

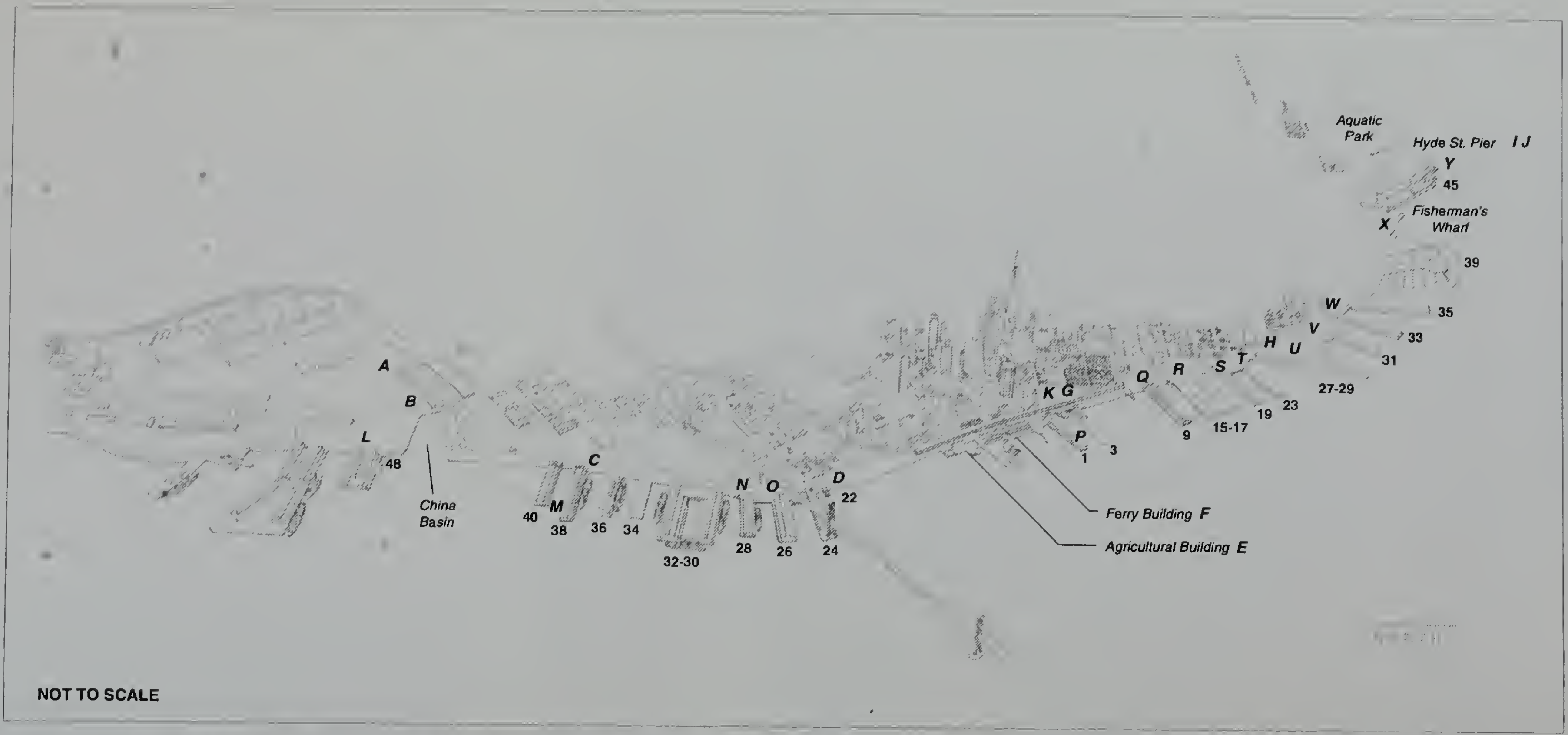
Figure

Map of San Francisco Yard Show
the Concentration of Historic Resour

Board of Harbor Commissioners was the public agency responsible for these improvements, and relied on State architects and engineers to meet the needs of the Port, while making every effort to make the waterfront visually attractive from the land side.[4]

A monument to the flourishing maritime-based economy that existed during its period of development, this string of resources forms an architecturally cohesive "edge" to the City, that is distinguished by a unique building type encompassing pierheads and bulkheads and pier sheds. Often built simultaneously, pierhead and bulkhead "buildings" and pier sheds were a logical outcome of finger pier construction, which allowed cargo to be transferred from ships berthed along the long, projecting platforms directly onto land-based freight transport systems (trains or trucks). Pier sheds were usually constructed to be as long and wide as the pier platform, and are large, utilitarian steel- or wood-framed structures with few or no partitions. Pierheads and bulkhead buildings were constructed at the transition between pier structures and the land. Most are large, two-story structures with central arched openings fronting onto the Embarcadero roadway. Built to appear solid and monumental from the street, their steel- or wood-frame structure is often visible from immediately inside the arched opening. Stylistic features are usually Classical Revival (they have been referred to as "Neoclassical," "Beaux Arts," and monuments of the "City Beautiful" movement), but are also Gothic Revival (Pier 48) or Mission Revival (Pier 28).

A map of the waterfront is provided in Figure 46, which shows significant and potentially significant resources on Port property between Pier 45 and Pier 48. These resources are listed in Appendix I, along with resources within the San Francisco Yard.



Significant (Previously Designated) Resources*

- A. Fourth Street Bridge (1917)
- B. Third Street Bridge (1933)
- C. Pier 38 Pierhead Building (1934)
- D. Fireboat House/Pier 22.5 (1915)
- E. Ferry Station Post Office (1914) (Agriculture Building)
- F. Union Ferry Terminal (1896) (Ferry Building)
- G. Northeast Waterfront Historic District
- H. Beltline Railroad Roundhouse (1914)
- I. Hyde Street Pier
- J. Historic Ships (various berthing locations)
- K. Pier 1-5 Pierheads & Bulkheads (1918-30)

Potentially Significant (Undesignated) Resources **

- L. Pier 48 Sheds and Pierheads (1930)
- M. Pier 38 Shed (1934)
- N. Pier 28 Shed and Pierhead (1912)
- O. Pier 26 Shed and Pierhead (1912)
- P. Pier 1-3 Sheds (1918-30)
- Q. Pier 9 Shed and Pierhead (1936)
- R. Pier 15 Shed and Pierhead (1930-31)
- S. Pier 19 Shed and Pierheads (1936)
- T. Pier 23 Shed and Pierhead (1931)
- U. The Annex/Beltline Railroad Office (1909)
- V. Pier 29-31 Pierheads, Bulkheads, and Sheds (1915-18)
- W. Pier 33-35 Pierheads, Bulkheads, and Sheds (1916-32)
- X. Ferry Arch (1915)
- Y. Pier 45 Pierheads and Sheds (1927-29)

* Includes local Landmarks and locally designated historic districts, resources listed in the National Register of Historic Places or officially determined eligible for listing in the Register, resources included in the California Register of Historic Resources, and resources determined by the State Historic Preservation Officer to appear eligible for listing in the National Register.

** Includes resources rated in the 1976 DCP Survey, resources rated by SF Heritage, and associated pier sheds considered by reviewers to be integral to these rated resources.

SOURCE: Environmental Science Associates and San Francisco Planning Department

Figure 46

Map of Significant and Potentially Significant Resources in the Project Area, from China Basin Vicinity to the Hyde Street Pier, Showing the Concentration of Resources Along the Waterfront

NOTES - Historic Architectural Resources

1 San Francisco Department of City Planning, 1976 City-Wide Architectural Survey. Survey results are available for public review at the San Francisco Planning Department, 1660 Mission Street.

2 Ryser, Mark, letter to Keri Lung of the Port of San Francisco from the Foundation for San Francisco's Architectural Heritage, May 4, 1993. This letter describes ratings from a 1983-84 Survey Effort. Documentation is available at the Heritage Offices, 2007 Franklin Street, San Francisco. For a detailed description of the rating system and criteria, also see Charles Hall Page & Associates, and Michael Corbett, Splendid Survivors: San Francisco's Downtown Architectural Heritage, prepared for the Foundation for San Francisco's Architectural Heritage, San Francisco: California Living Books, 1979. According to Michael Corbett, who coordinated the survey effort for Heritage, Heritage ratings "were intended to refer to the entirety [of the pierhead, bulkhead, and pier shed groupings], but did not distinguish between structures built at different times." Phone conversation, November 30, 1995.

3 Snyder, John, "Historic Architectural Survey," incorporated as Appendix C in "Historic Properties Survey Report, I-280 Transfer Concept Program," prepared by Caltrans District 4, Environmental Analysis Branch, August 1983.

4 Zane, Wendy, "On the Waterfront of San Francisco," an unpublished manuscript available at the San Francisco Planning Department, c. 1991.

5 Bloomfield, Anne, Paul Groth, and Dean Macris, "Historic Architectural Survey Report," incorporated as Appendix D in "Historic Property Survey Report, Embarcadero Surface Roadway Project," prepared by the City of San Francisco Department of Public Works, August 1990.

6 Marsh, Vincent, "Draft Fisherman's Wharf Area Plan Cultural Resources Component," an unpublished manuscript available at the Department of City Planning, 1660 Mission Street, August 1994.

7 McGrew, Patrick, "Historic Architectural Survey," incorporated as Appendix A in "Historic Properties Survey Report, Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Structure," prepared by Public Affairs Management and Parsons, Brinckerhoff, Quade and Douglas for the San Francisco Planning Department, January 1995.

8 Goldenberg, Nancy and Marianne Hurley, Carey & Co., Inc., "Proposition H Waterfront Plan EIR Historic Resources Report -- Southern Waterfront," December 15, 1994. A copy of this report is available for public review in the project case file at the San Francisco Planning Department, 1660 Mission Street.

9 City and County of San Francisco, "Article 10: Preservation of Historical, Architectural and Aesthetic Landmarks," and "Article 11: Preservation of Buildings and Districts of Architectural, Historical and Aesthetic Importance in the C-3 Districts," of the Municipal

Code Part II, Chapter II, Planning Code, as adopted 1/26/67 (Article 10) and 9/17/85 (Article 11), and amended through March 1994.

[10] California State Office of Historic Preservation, Inventory of National Register Properties in San Francisco, June 26, 1994, and California Public Resources Code Section 5024.1.

[11] Material in this section excerpted from the "Southern Waterfront Survey" prepared by Carey & Co., Inc., December 15, 1995 and cited above. *Also see*: George R. Adams, "Draft National Register of Historic Places Inventory -- Nomination Form for the San Francisco Yard, Bethlehem Steel, Shipbuilding Division," an unpublished manuscript prepared for the Historic Landmarks Project of the American Association for State and Local History, Nashville, Tennessee; Patrick McGrew, "Draft Nomination Form for the Union Iron Works, 20th Street at Illinois Street," an unpublished manuscript available at the San Francisco Planning Department, 1660 Mission Street; and Bill Sugaya, Carey & Co., Memorandum to Hillary Gitelman, Department of City Planning, re "Proposed Historic District, San Francisco Yard, Waterfront Plan EIR, " November 14, 1995.

[12] Ibid, N.P.

O. ARCHAEOLOGICAL RESOURCES

INTRODUCTION

The Project Area consists of the waterfront along the northeast and eastern edge of San Francisco. This section of the City is arguably the richest in known and potential archaeological resources. Prior to European settlement, the Bay shore contained rich wetland and estuary habitats providing food and water resources to the local Costanoan/Ohlone Indians, whose settlements and encampments are known to have existed along the margins of these features. The earliest European settlements occurred at the Mission site near what is now Sixteenth and Dolores Streets (inland of what was Mission Bay), and later at Yerba Buena Cove, near what is today the downtown financial district. Subsequent development pressure fueled by the Gold Rush of 1849 led to substantial filling of tidal marshlands and other shore areas, extending the City land boundary eastward into San Francisco Bay. Essentially all of the development along today's Bay shore is constructed on various layers of fill deposited by design or happenstance over about a 100-year period from the mid-1800's to the middle of this century.

Due to the size of the Project Area and the complicated patchwork that comprises its physical and cultural history, the archaeological potential of properties within the Project Area must necessarily be generalized. A substantial body of documentation exists on the Project Area's history and known and suspected buried cultural resources (see Notes listing, pp. 356-363) and forms the basis of this section. While it would be impractical to conduct a block-by-block historic assessment of the entire area, it is also unnecessary to identify in detail all locations of known or potential archaeological sensitivity for purposes of this analysis. More specific information can be found in the numerous volumes of background reports. This Environmental Setting section presents a brief overview of the history of the entire Project Area, followed by more detailed summaries on the five subareas as defined in the Waterfront Land Use Plan (WLUP).

PROJECT AREA CULTURAL OVERVIEW

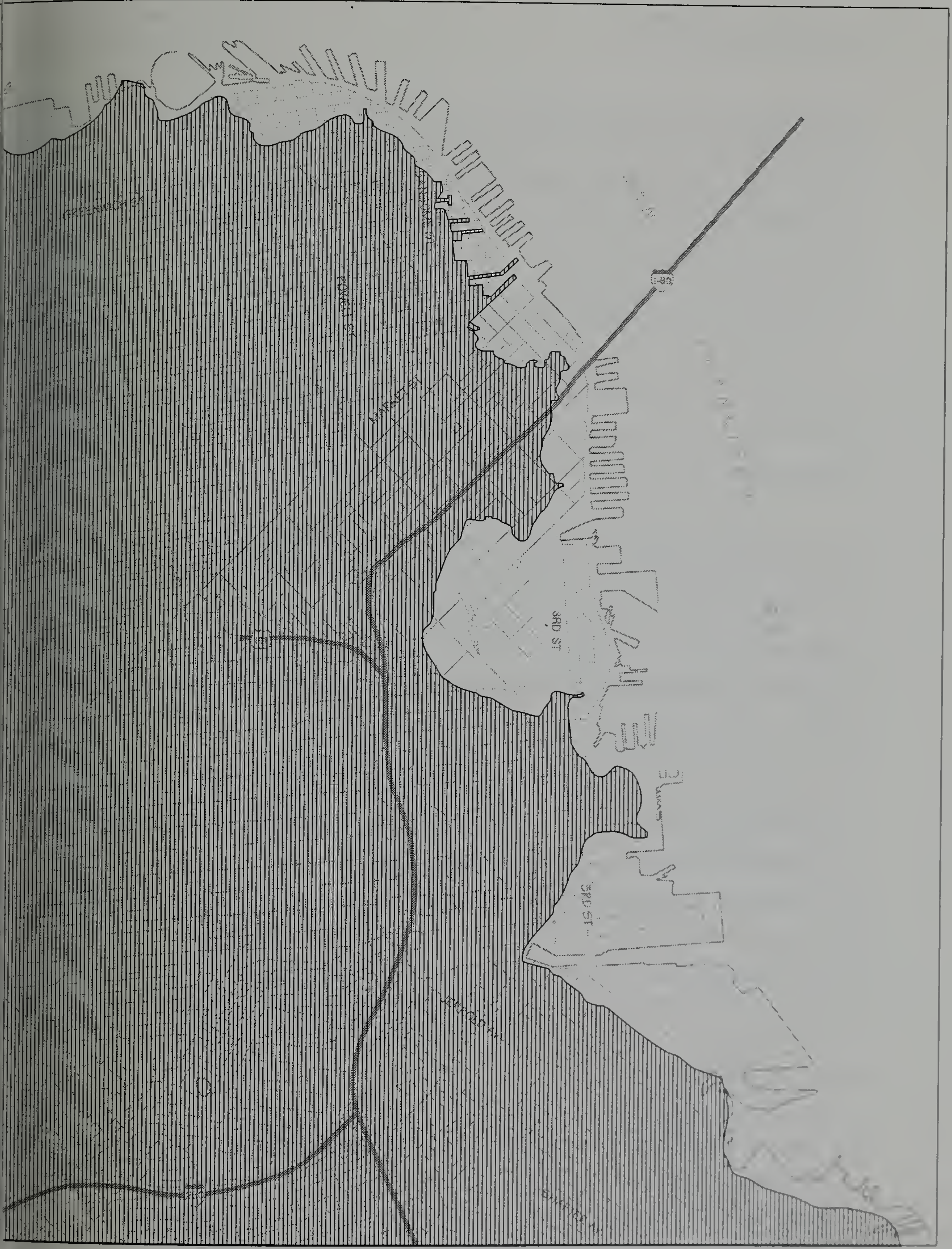
Prehistoric Overview

Archaeological evidence seems to indicate that the San Francisco Peninsula was an environmentally favorable locale in prehistoric times, with potable water available from perennial and intermittent springs and exploitable resources available from the San Francisco

Bay, interior foothills and valleys, and the Pacific Ocean. Prehistoric populations on the Peninsula appear to date from as early as 5500 years ago. Discoveries made during excavation of the BART tunnel at the San Francisco Civic Center were radiocarbon dated as being approximately 4900 years of age, and other Peninsula finds from Stanford and Sunnyvale demonstrate regional habitation between 3500 and 2500 B.C. Native American people appear to have lived in and around San Francisco continuously between this time and the arrival of Europeans in the latter half of the 18th century.[1] Bay Area Native American cultures were basically similar to those elsewhere in California, living by hunting and collecting wild foodstuffs rather than farming or keeping domestic livestock. As well as permanent village sites occupied throughout the year, these early inhabitants also lived in small mobile groups, changing campsites frequently, likely in rotation with the exploitation of local resources whose availability varied from year to year and season to season. The demands of this mobility resulted in the development of a simple material culture which included primarily possessions that could be regularly transported from place to place.[2]

Due to the impacts of early settlement and urban development in the City, relatively little prehistoric archaeological information has been recovered from the northern San Francisco peninsula compared to other areas of the Bay. The Spanish called the natives of the area Costanoan. In 1925, anthropologist Alfred Kroeber wrote, “The entire Costanoan frontage on ocean and bay is lined with shell deposits. San Francisco Bay in particular is richer in such remains than any other part of the State, except Santa Barbara Island."[3]

These shell deposits have been the focus of archaeological research since the early 1900s. In 1909, N. C. Nelson conducted a survey of shell deposits around San Francisco Bay and along the coast from Fort Ross to Monterey. Several of these were located near the Project Area, the closest being along South Beach. Others were located further inland of the 1852 shoreline of Yerba Buena Cove. Figure 47 provides a map of the 1852 shoreline as it relates to the modern City land boundary, prior to intensive filling (some fill had already occurred between Market Street and Telegraph Hill by 1852). A summary up to 1982 of known prehistoric archaeological resources from the peninsula can be found in M. Rudo's Master's Thesis, "The Prehistory of San Francisco."[4] Randy Milliken's analysis of mission records places a village site near the Project Area. This village, "Sitlintac," is placed either near the former Yerba Buena Cove shoreline or in China Basin near the former mouth of Mission Bay.[5] Either of these locations appears to coincide with shell mounds recorded by Nelson in 1909.[6]



U.S. Coast Survey, City of San Francisco and its Vicinity, 1852.

San Francisco Waterfront Land Use Plan EIR ■

Figure 47

Map of 1852 Shoreline

While there are limited known prehistoric archaeological resources in the Project Area due to the massive landfilling, this does not rule out the possibility of submerged resources. Due to rising sea levels and changes in environmental conditions, there may be buried deposits well below the shoreline, on what had been the Bay floor.[7] An example of a deeply buried deposit was uncovered during excavation for the Civic Center BART Station (CA-SFr-28), during which a human burial was found 22.9 meters below the surface. Radiocarbon dating of these remains placed their age at around 4900 years old.[8]

Due to the early urbanization of San Francisco and the massive amounts of cutting and filling, the archaeological record has been in many cases destroyed or at least obscured. Prehistoric archaeological remains found in a good context would generally be considered significant finds.

Just as the archaeological record in San Francisco has diminished due to early urbanization, the Costanoan ethnographic record has suffered as well. Establishment of Mission San Francisco de Asis (Dolores) and the San Francisco Presidio in 1776 disrupted native culture. Natives provided a labor force for the Spanish. They worked as household servants, vaqueros, soldiers, ship builders, pilots and navigators.[9] Between forced labor and disease, the "converts" rapidly died off. In 1806 alone measles accounted for over 300 deaths. The historian Hubert Howe Bancroft placed the San Francisco Mission's death rate at 75 percent.[10]

The high mortality rate drastically limited the opportunity for gathering first-hand ethnographic material. Much of the ethnographic information in existence is from explorers' accounts and mission records. Due to the high mortality rate and need for labor, the Mission imported natives from other areas around the bay, who brought their own traditions, diluting San Francisco Costanoan ways of life as part of the historic record. The missions also discouraged native ritual and social activities as part of proselytizing, further limiting knowledge of the past.

Spanish and Mexican Periods Overview

The Spanish Period in San Francisco was transitional between the millennia of native population and the City of San Francisco. Captain Gaspar de Portola's search for an anchorage preferable to Monterey brought him to San Francisco in November of 1769. He must have been underwhelmed, to write in his journal "we have found nothing." Father Juan Crespi was more impressed, noting in his diary: "The bay is a very fine and large harbor, such that not only all the navy of our most Catholic Majesty but those of all Europe could take shelter in it."

In 1775 the first Spanish sailing expedition of the Bay would lead to the founding of Mission San Francisco de Asis (Dolores) and the San Francisco Presidio a year later. In 1776 it took ten days for Juan Batista de Anza to march a party of soldiers and settlers from Monterey. They founded the mission on a slough off Mission Bay and planted a flag near the entrance to the harbor.

The plan was that the mission would convert the natives and Europeanize them, eventually creating a society of Christian Indians who would colonize California. The reality was the decimation of native culture and population. The Costanoan population for San Francisco and San Mateo counties prior to Spanish arrival was estimated at around 10,000. By the time California reached statehood there were only about 1,000 remaining.[11]

Mission Bay was a tidal lagoon with an abundance of natural resources, notable for its populations of birds and mollusks. The location of the Mission itself, however, appeared problematic due to poor agricultural lands and lack of traditional native food sources, which contributed to high native mortality. Areas to the north near the shoreline provided a rich environment. A resident in 1839 noted the area of Rincon between Rincon Hill and Mission Bay was a popular hunting spot teeming with deer.[12] This area was undoubtedly used as pasture for cattle.

The Presidio shifted its focus toward Yerba Buena Cove in the northeast part of the City in 1825. n that year there were "severe storms, winds, and rains late in this year, which endangered the vessels off the Presidio at the usual anchorage and forced the sailing masters to transfer their hips to the safer and more protected cove of Yerba Buena."[13] A new pueblo was eventually built at the cove to protect shipping interests. In the 1840's building materials were recycled from the Presidio for construction of the custom house in the Plaza and the Diaz house at Montgomery and Jackson Streets. Yerba Buena was the site where, in 1846, Americans from he sloop *Portsmouth* raised the American flag.

After secularization of the missions in the 1830's there was more development of Yerba Buena Cove and an expansion of trade activities. The granting of large tracts of land, usually to former oldiers and other settlers, took place at this time. The cove is where William Richardson perated launches and built a house in 1837. It was Richardson who fashioned the first wharf in he City, little more than planks. In 1838, Jacob Leese built a house and went into business.[14] In 839, Leese with Salvador Vallejo would build the first permanent wharf, using native labor.

Because most of the Project Area was under water during the Spanish and Mexican periods, it is unlikely that associated archaeological deposits exist from these eras. However, due to the use of Yerba Buena Cove and Mission Bay, there is the possibility of unrecorded submerged resources. Ship hulks from this period would be unlikely finds. Especially during the early years of settlement, if a boat had sunk in the Project Area it would likely have been salvaged due to a scarcity of available materials at the time. Given the limited documentation from the period and what is known about how these areas were used, there is always the possibility of finding the unexpected. Because little is known about or has been found from this period in the Project Area, any archaeological deposits from this period would likely be considered significant.

Early American and City Building Periods Overview

The Project Area and surroundings have experienced dramatic physical changes due to explosive economic development, as the center of shipping and trading activity during the Gold Rush through San Francisco's early development as the preeminent city on the West Coast of the United States. As the eastern extreme of this expansion, most of the Project Area is reclaimed land that was underwater prior to 1850. The waterfront as it exists today evolved piecemeal, in stages of wharf and pier building, followed by landfilling around and incorporating these structures, to once again building new piers and wharves from the newly reclaimed, eastward-expanding shoreline. Two sea walls were constructed along most of the project waterfront, the second of which established the present configuration of The Embarcadero and shoreline. The first one created a shoreline of staggered right angles in the north/central part of the Project Area following the grid pattern of landside city blocks. Its location generally demarks the inland boundary of much of the northern Port jurisdiction and the Project Area.

As the area immediately landside of the current sea wall was the most recently filled (between the old and the new sea walls, and particularly from the inland boundary of The Embarcadero eastward), and constructed under large public works contracts rather than in the haphazard manner characterizing the earlier, more inland fill, it tends to lack the quantity or quality of cultural remains found further to the west, closer to the original shoreline. However, in general, the uniqueness of San Francisco's history and its rapid development have left a rich potential for historical archaeology in the waterfront and downtown area. This aspect of the City has been characterized by archaeologists as follows:

> "Viewed from an historical archaeological perspective, then, San Francisco is an outstanding cultural resource. Great volumes of cultural materials have been created or imported then deposited here. The nature of cities, San Francisco's long history as the premier western city, and its peninsular location have thus resulted in the City's status as the most important single historic archaeologic site in the western United States. No other western archaeological site can match San Francisco in the amount and diversity of historic cultural materials. It is in a class by itself. Decisions about the significance or lack of significance of specific cultural resources should be viewed within this context."[15]

The primary resources that are known and anticipated to occur in the Project Area are those associated with the Gold Rush, and the subsequent stages of San Francisco's early development as a major urban center. (It is also this period and unique aspect of the City's history which gives San Francisco its contemporary importance as a cultural resource.) As characterized by Mason Tillman Associates in a report prepared for the Fisherman's Wharf Development Program, "San Francisco was the center of an economic empire that stretched from Mexico to Canada, and it maintained trade routes with both Europe and the Orient. By 1852, only three U.S. cities could claim more trade passing through their ports than San Francisco. The City completely dominated the western coast of America: in 1850 it was the only western settlement to rank within the top 50 United States cities. Additionally, San Francisco was important for its multi-cultural character. Emigrants from other areas in the United States, as well as Europe, Asia and South America, flocked to San Francisco . . ."[16]

The history of each subarea from the Gold Rush to the present is summarized below, followed by a listing of archaeological resources that are known or suspected to exist within or near its boundaries. (These provide a general indication of the nature of potential resources existing within the Project Area.)

HISTORY (GOLD RUSH TO THE PRESENT) AND ARCHAEOLOGICAL RESOURCES BY SUBAREA

Fisherman's Wharf Subarea

General History

The entire Fisherman's Wharf subarea was under water in prehistoric times through to the Gold Rush period, when extensive reclamation and wharf building commenced with the establishment of a bulkhead and the construction of Meiggs' Wharf in the early 1850's.[17] There is therefore no ndication of prehistoric (to 1775) or Spanish-Mexican period (1776-1848) activity in the ubarea, although it is possible some prehistoric settlements and associated artifacts were deposited prior to inundation by the rise in sea level over the past several thousand years. The extensive dredging and filling of the Bay in and near the Fisherman's Wharf subarea has likely impacted whatever sites might have existed in nearby areas now under water, making meaningful recovery or identification of such sites questionable.[18]

The Fisherman's Wharf subarea did not develop in the wake of the Gold Rush quite as early or as rapidly as did Yerba Buena Cove, largely because it did not provide a safe harbor; ships had to contend with shallow water and exposure to prevailing winds meeting steep hillsides along the shore. Development was initiated by Henry Meiggs, who constructed an expansive wharf extending about 1,600 feet into the bay to serve large cargo ships. Shipping activity intensified in the subarea along with the establishment of North Beach as a recreational destination, with bathing and boating activities, amusements, hotels, bars and restaurants, scenic views and the Sausalito ferry dock. Because of its distance from downtown, North Beach did not experience industrial and residential development until after the Gold Rush.[19]

The City Building period, from 1858 to 1906, saw the introduction into and intensive expansion of industrial development in the subarea. Sporadic and rapid landfilling, often with industrial and municipal refuse, behind the newly constructed sea wall created the land beneath the subarea as it exists today. Early industries included woolen mills, mining-related activities such as smelting plants, chemical refineries, wire manufacturers, and others. The extensive garbage dumping associated with this expansion destroyed the area's appeal as a recreational destination. The industrial activity eventually ran into a depression with the opening of the railroads, and it was then the ocean-based industries which prospered. Fishing-related industries began to concentrate in the area during this period, and with the development of new wharves and the settling of fishing boats at the foot of Taylor Street, it became a popular place to visit and shop.

Mixed industrial and fishing enterprises continued up until the 1906 earthquake and beyond, in varying forms. Jefferson Street was filled in the early years of the century, and rock from a tunnel through nearby Black Point was used to build an embankment near Hyde and Larkin Streets. The State Harbor Commission undertook the construction of several wharves and the paving of local streets from the 'teens up through the early 1930's.[20]

Examples of Known and Potential Archaeological Resources

- A collection of Chinese ceramics and other artifacts in a refuse deposit was discovered and removed during excavation of the North Point Pump Station for the San Francisco

Wastewater Management Program. This site is near the original shoreline headland known as North Point, and the part of the subarea closest (within a few hundred feet) to the pre-1850 shoreline.[21]

- There is high potential for remains from the Gold Rush and City Building periods to exist in the subarea; various early period refuse deposits may exist within fill underlying the subarea generally, and particularly at the eastern and western ends of the subarea (between Grant Avenue and Kearny Streets, and near the foot of Hyde and Leavenworth Streets), where the original shoreline was closest to the Project Area and therefore there was a higher potential for earlier uncontrolled dump sites, such as the deposit noted above.

- There is high potential for remains of pilings and other pier and wharf structures, including Meiggs' Wharf near the foot of Powell Street.

- A wooden sailing ship hull, the *Tonquin*, is possibly located near the intersection of Jefferson and Leavenworth Streets, in or near the Project Area. There is no evidence indicating Gold Rush ship hulls were used for landfill in the subarea, but unanticipated wrecks might be expected given the shallow water and presence of wharves and shipping activity. For example, though approximately 1,000 feet outside the Project Area, the *Euphemia*, which served for a time as the municipal jail, may be buried near Jones Street between Francisco and Bay Streets.[22]

- A prehistoric burial site was reportedly discovered in the early 1860s on an eroding bluff (formerly Tonquin Point) near what is now the intersection of Hyde and Beach streets, outside the subarea, and was apparently destroyed by subsequent development.[23]

Northeast Waterfront Subarea

The following is largely summarized and extracted from a previous Olmsted, Olmsted and Pastron report,[24] portions of which evaluate geographic subareas that are nearly identical to the Northeast Waterfront subarea.

General History

he Northeast Waterfront subarea, like nearly all of the Project Area, was underwater prior to the apid eastward expansion of wharves and landfill in the post-Gold Rush period, with the minor xception of a small area over what was formerly known as North Point, along Kearny Street etween Bay and Francisco Streets. The subarea boundary also comes near to the original horeline at the intersections of Chestnut and Montgomery Streets and Sansome and Lombard treets. This section of the coast was a steep hillside down to the water's edge in pre-Gold Rush mes, and has since been excavated, leveled and used for fill. Consequently, there is little or no ossibility that any prehistoric cultural deposits exist in the subarea. Similarly, the subarea remained largely underwater throughout the Spanish and Mexican periods. There are no records of any related period development nearby, and no indication that any vessels were sunk here between 1775 and 1848.[25] It is unlikely that any cultural materials from either the prehistoric or the Spanish and Mexican periods would exist in the area, and any that had been here would probably have been obliterated by the massive quarrying, excavation and filling that has occurred since the 1850's.

The Northeast Waterfront subarea's inland boundary runs generally within a block of the 1852 shoreline. The width of the land area between the original shoreline and the current waterfront (delineated by the new sea wall) is fairly narrow, particularly in the northern portion. Since the old shoreline is in close proximity to the Project Area, the potential for significant historical archaeological deposits should be very high in this area. Numerous Gold Rush-era wharves existed either in or adjacent to the subarea, which was the location (as an extension of more intensive activity to the south) of intensive commercial shipping activity.

The base of Telegraph Hill initially provided a limited amount of land suitable for building. It did, however, provide deep water close to shore. During the 1850's, several men took advantage of the deep water to build wharves accessible to the largest of ships. There was immediate benefit, since shipowners would rather unload directly to shore instead of shuttling cargo by smaller craft.[26]

The first permanent wharf in the City was built in 1839 at the foot of Broadway about 144 feet east of Battery Street. The wharf was 12 feet square and built of stone, with a stone-filled causeway extending 18 to 20 feet into the bay. It is unknown in which direction it extended. It was built by Jacob Leese and Salvador Vallejo for the Russian traders from Fort Ross. There was also an adjacent 36-foot-long storehouse and tents for the traders.

Subsequent early development of shipping piers has been documented as follows: "Late in 1846 William S. Clark on entering Yerba Buena landed at this wharf which he called the 'point of rocks' and at which in 1847-48 he built the first pier wharf, 150 feet long, constructed of redwood timber rafted from Marin County. Clark's wharf was the first one at which landing could be made at all stages of the tide."[27]

By 1857 there were wharves extending from most streets existing at that time in San Francisco. The piers from Chestnut, Sansome, Lombard and Battery Streets were "the premier dock and warehouse district of the clipper-ship period." Also in the same area was the Merchant's Dry Dock Company, which was present from 1867 to 1879.[28]

Archival research for the Levi's Plaza and One Union Street Projects indicates a series of docks, wharves and warehouses extending from present-day Chestnut and The Embarcadero to Vallejo and Front Streets. Like most of the waterfront, filling of the bay and water lots progressed rapidly during the 1850's. Maps and records indicate the possible locations of nine ships that may have been used as store ships or fill in this area.[29]

All or part of ten city blocks are located in the Project Area landward of The Embarcadero. The Northeast Waterfront subarea retained much of its historical integrity as a warehouse district from the Gold Rush to the 1960s, when new development began replacing the older structures.[30] Some of the early warehouses survived the 1906 earthquake and fire, while those that did burn were rebuilt in like fashion. Warehouses that were built after or survived the 1906 earthquake are less likely to provide significant archaeological deposits that would add to our knowledge of the past. More likely to yield significant archaeological resources are those blocks which contained stores, saloons, boarding houses, hotels and industrial complexes.

There is a high potential for archaeological resources from the Gold Rush and City Building Periods in the subarea. Due to the rocky, steep terrain of Telegraph Hill, the 1852 shoreline is in close proximity to the project boundary. Several sites have been recorded in or adjacent to this area. Several wharves and ship hulks from the 1850's have been documented as existing either in or adjacent to the project boundary at one time, the remains of which may still be present. Historical archaeological resources have been recovered in and adjacent to the subarea.

Examples of Known and Potential Archaeological Resources

> Excavations at Levi's Plaza uncovered Cowell's warehouse and the ship *William Grey*.[31]
>
> Chinese ceramics/refuse fill was discovered at the corner of Kearny Street and The Embarcadero during construction of North Point Pump Station for the San Francisco Wastewater Management Program (same site area identified under the Fisherman's Wharf subarea discussion).[32]
>
> Archival research indicates that "Law's Wharf" extended into the Project Area.[33]
>
> Archaeological investigations at the Embarcadero Terraces, Seawall Lot 321, indicated the possibility of a ship hulk. Materials recovered were only suggestive and not definitive proof of a hulk's existence.[34]

- Two store ships, the *Philip Hone* and the *Rhone* were believed to be "located on the block bounded by Union, Green Front and Battery streets."[35] They may actually lie within the Project Area.

- Cunningham's Wharf extended east from Battery Street between Vallejo and Green to a "T" in the middle of Seawall Lot 322 between Front and Davis Streets.[36]

- The Broadway wharf extended from the foot of Broadway east to about the middle of the present Embarcadero.[37]

- The Merchant's Dry Docks at the base of Telegraph Hill had a steady business for 12 years from 1867 to 1879. Despite past dredging there may be remains from this business.[38]

- The "Lawson ships," the *Noble*, the *Hardy*, the *Inez* and the *Bethel*, were sunk to claim water lot ownership in the early 1850's near the block bounded by Pacific, Jackson, Davis and Drumm Streets, exact location unknown; some of these remains could have drifted into the Project Area.[39]

Ferry Building Subarea

General History

The Ferry Building subarea consists of a relatively narrow strip of property that is composed entirely of fill placed since the mid-1800's. It is located approximately three to four blocks offshore of the former shoreline, outside of what was later called Yerba Buena Cove. The subarea boundary is within one block of a point in the original shoreline between Folsom and Harrison Streets. As the area was entirely under water from the prehistoric through the Spanish and Mexican periods, there is essentially no possibility of significant cultural material from these periods being present here.

The Ferry Building section of waterfront from the end of Pacific Avenue to Rincon Point encompasses the former Yerba Buena Cove and the heart of Gold Rush San Francisco. The cove was very shallow and at low tide was largely mud flats. During the late 1830's there were two houses built at the cove by William Richardson and Jacob Leese.

After the gold finds of 1848, filling and wharf building to deeper water began at a rapid pace. The early development was focused between Market Street and Pacific Avenue. In 1849 the Central Wharf or Long Wharf was projecting from Commercial Street as far as Battery. The wharf was extended further into the bay as lots were acquired on each side by the wharf company. The company owners were two merchants named Mellus and Howard. As the wharf progressed, so did the filling of the water lots. Many of the early ships eventually became landlocked and used as storage or fill. The *Niantic*, which was uncovered near the intersection of Clay and Sansome Streets, was one of these storeships moored alongside the neighboring Clay Street pier.[40]

By the Coast Survey of 1853 the Central Wharf extended to about the location of the present Ferry Building. At that time the Market Street Wharf extended almost as far into the Bay.[41] By the Coast Survey of 1859 most of the lots north of Market Street had been filled to the Line of the Established City Front. The water lots in the cove south of Market Street were being enclosed by wharves, and those land lots west of Fremont Street were rapidly filling with buildings.

Just north of Rincon Point, the Folsom Street wharf extended to the City Front Line. Further north the Mission Street wharf extended almost as far as the Market Street wharf. Intersecting these wharves and enclosing the cove were Main and Steuart Street wharves. The 1859 map indicates a ship, possibly the *Trescott*, on Mission near Beale (about half of the hull enclosed with fill), Beale being a spit of fill extending across the cove.

A decade later, in 1869, the Coast Survey indicates that wharves or filled streets entirely occupy the former Yerba Buena Cove. There are buildings along both sides of the Steuart Street wharf. There may be archaeological deposits associated with these buildings. Seawall Lots 347-N and 347-S may contain significant archaeological deposits from this period. There is also the potential for ship hulks.

Historical research indicates that Steuart Street had been a piling-supported wooden surface from the Gold Rush days through 1880. There were buildings along both sides of the wharf as seen on the 1869 Coast Survey. The block bounded by Folsom, Howard, Steuart and The Embarcadero may contain potentially significant archaeological remains, because it had been continually used under a wide range of activities as a street wharf through the City Building period.[42]

Examples of Known and Potential Archaeological Resources

- The Gold Rush-era ship hulk of *Rome* or *Roma* was uncovered in 1994 during excavation for the MUNI Metro turnaround near Market Street and The Embarcadero.

- Excavations at Hills Plaza adjacent to the subarea uncovered possible remains of Charles Hare's ship-breaking yard from the Gold Rush era.[43]

- Piling remains of the old Pacific Avenue wharf were encountered at the foot of Pacific Avenue during a sewer project excavation. Excavation of a gold rush ship at the Levi's Plaza site also revealed that much of the decking of that wharf had been removed, probably to allow it to be filled at a later date.[44]

- During excavations near Steuart Street, wooden remains were discovered which appeared to be wharf or pier remnants dismantled and used for fill, lying about six feet below street surface. Unknown intact remains of wharf structure in this area would likely lie at deeper levels.[45]

- One or more hulks of Gold Rush-era ships could possibly be buried in waterfront landfill near the intersection of Folsom and Steuart Streets, based upon 1852 notations of "ships" in the area.[46]

- Hulks of two Gold Rush-era ships, *Galen* and *Othello*, are possibly located in fill along the line of The Embarcadero, slightly south of Market Street (associated with the *Rome*, or *Roma*, which has been recently uncovered, as noted above).[47]

- The "Lawson ships," the *Noble*, the *Hardy*, the *Inez*, and the *Bethel*, were purposely sunk to claim water lot ownership in the early 1850's near the block bounded by Pacific, Jackson, Davis and Drumm Streets; the exact location is unknown. Some of these remains could have drifted into the Project Area.[48]

South Beach/China Basin subarea

General History

In considering historical archaeological resources, the South Beach/China Basin subarea might best be viewed as two distinct sections -- one from the Channel Street area north to Harrison Street, and the other south of Channel Street to Mariposa Street. The northern section is much more closely associated with the original shoreline than the southern portion, which is located far offshore within what was formerly Mission Bay.

The entire area from Channel Street south to Mariposa Street was submerged beneath the waters of Mission Bay prior to expansive landfilling and urban development in the latter half of the 19th century. There is, therefore, little possibility of the existence of any cultural materials of the Prehistoric, Spanish, and Mexican, or Early American periods of any quantity or importance in this portion of the subarea.[49]

During the American and Gold Rush periods, there was a great deal of diverse activity in the Project Area from Rincon Point to China Basin. From the 1850's the Point hosted commercial activity such as ship building, ship breaking and fishing. Rincon Hill, however, was a much different case. Wealthy San Franciscans built substantial residences here overlooking the Bay, but these eventually succumbed to the earthquake and to development pressure.

Boatbuilding and shipbuilding began at Steamboat Point (located roughly along King Street from Fourth Street to just east of Second Street) in the early 1850's, and it is possible that debris related to these operations exists along the Fourth Street block.[50] Landfilling also began about this time, incorporating industrial waste material as well as municipal garbage. Long Bridge, a bridge following the line of Fourth Street spanning former Mission Bay, was completed in the mid-1860's. There are likely to be pilings and debris associated with the businesses, boatmen and other waterfront users of the time buried beneath and adjoining Fourth Street.[51]

By the late 1880's lumberyards, brickyards and boatyards began to line the reclaimed shore of what once was the southern portion of Mission Bay. The second sea wall was constructed by the Santa Fe Railroad along the waterfront here, extending about 3,000 feet from China Basin to Central basin. The early decades of the century also saw the development of petroleum company yards, including the Union Oil Company and Associated Oil Company east of Illinois Street near Sixteenth Street.[52]

Channel Creek (near what is now Channel Street) developed in the 1880's into a heavily used landing for bulk cargoes such as hay, lumber and brick, of relatively small bay and coastal carriers in sailing scows, coastal schooners and steam schooners. The area remained under this use through the decline of such maritime commerce after the 1920's.[53]

The San Francisco and Pacific Glass Works, located from 1871 to 1886 on King Street, backing onto Berry Street, between Fourth and Fifth Streets, could have contributed interesting glass manufacturing refuse to the fill beneath Berry Street and perhaps further south to the margins of he Project Area.[54] Of the range of industries formerly located along Berry Street during the atter part of the 19th century, the mid-1880's shipyards of Beaton & Boole and Alexander Hay are of the most interest; most of the early steam schooners that revolutionized the lumber trade were built here.[55]

In the early 1850's there was a Chinese fishing village in South Beach, around the corner from Rincon Point, along Delancey Street near the project boundary. Many of the residents had been employed by John Hare for ship breaking. There is documentary evidence that some of these workers went into ship-breaking businesses for themselves.[56] There were also several shipyards along the shore including Tichenor's Marine Railway and ship repair facility or Tichenor's Ways. Dating from 1851 this was the "earliest and, for many years, most important commercial venture in the South Beach area."[57] It was the only dry dock operation in the City until 1855.

Rincon Hill had originally been a suburban area occupied by the wealthy in large Victorian mansions overlooking the Bay. This is where the "power elite" lived in the 1850's.[58] During the 1860's land use began to change with development south of Market. In 1865 the Long Bridge was built from Fourth Street out to Third where it turned, extending to Potrero Point. Two years later it was extended to Hunters Point. Since Mission Bay was effectively closed to water traffic, filling of the area became the next phase. At this time the railroads were also granted 350 acres of Mission Bay for freight operations.[59]

Major changes were occurring in the area as shipping infrastructure developed, shifting freight traffic of major steamers from New York and the Far East to the south waterfront. A subsequent railroad ferry slip was built at the foot of Second Street to handle railroad freight boxcars which were ferried from Oakland, the terminus of the transcontinental railroad. The Central Pacific eventually purchased and occupied Tichenor's Ways. To facilitate access from the south waterfront to the City a grade was cut through Second Street, leaving a scarred and disheveled Rincon Hill.[60]

Sometime between 1869 and 1877, further up Mission Bay, just north of the inland Channel Street portion of the subarea, an officially designated waste disposal site was located along Berry Street between Sixth and Seventh Streets. Known as "Dumpville," this "sanitary landfill" consisted of refuse covered with sand and soil.[61] A resident scavenger and squatter community lived in shantytowns at the foot of Fifth, Sixth and Seventh Streets - by 1889 the dump was under the control of a six-person "company" under contract with the City.[62] The dump rapidly expanded and covered over 20 acres, including the entire south side of Channel Street, ultimately surrounding and polluting Mission Creek.[63] By 1895 most of the land in the area had been reclaimed and Dumpville was seen more as nuisance than necessity.

At the end of the last century, the South Beach/Rincon Point area was both upgraded and downgraded toward a middle class mean. The burning of Dumpville was seen as a civic improvement; the cutting through of Rincon Hill spoiled the neighborhood of expensive homes. The remaining homes were finished off in 1906. After the earthquake, the area converted to industrial sites and worker housing. Major alterations to the landscape continued into the 1930's. Eventually the remnants of Rincon Hill were graded for industrial sites and the adjacent bluff was cut for the Bay Bridge approach.[64]

As part of this post-quake rebuilding in 1907, the grading of King Street caused workers to dismantle part of the Gold Rush-era whaler *Lydia* with sledgehammers. News accounts indicate the ship had been sent to be dismantled in 1901. Apparently little had actually been done. The *Lydia's* hull was subsequently left at the foot of King Street near the old Pacific Mail dock. Trains on the spur line to Pier 42 had been running over her buried stern for several years.[65] The *Lydia* was uncovered in 1978 during excavation for a waterfront sewer system.[66]

Examples of Known and Potential Archaeological Resources

- *Lydia*, a Gold Rush-era whaling ship, is a 19th century wooden sailing vessel that was buried intact in landfill on King Street near The Embarcadero.[67]

- A buried redwood platform was identified along King Street between Third and Fourth Streets, in front of the southwestern entrance of the San Francisco Recreational Vehicle Park. Wirth Associates believes the platform, on which a heavy lifting device called a capstan was secured, was associated with Gold Rush-era ship-building enterprises at Steamboat Point, possibly those operated by Henry Tiernan, Henry Owens or John G. North.[68]

- Wharf pilings without decking were encountered at the foot of Bryant and Spear Streets, just south of the Bay Bridge, the remains of a larger wharf complex.[69]

- Remains of various shipyards, ship-breaking and other related early industries likely exist within or near the project boundary along King Street, over what was formerly known as Steamboat Point.

- Remains of a former Chinese fishing village located along Rincon Point and South Beach, near Delancey and Brannan Streets, may exist near the Project Area.[70]

- Various remains associated with "Dumpville" may be located along Berry Street between Sixth and Seventh Streets, a former municipal landfill and shantytown community.

- Industrial refuse deposits associated with the Pacific Glass Works along Berry Street between Fourth and Fifth Streets could be encountered in the Project Area.[71]

- Areas near Fourth Street could include deposits associated with Long Bridge, portions of the structure itself and deposits from various related, largely recreational, activities.[72]
- Remains of the Fourth Street Wharf may exist in the Project Area. It was located in the former Santa Fe Railroad yard, northeast of Fourth Street, between Third and Alameda Streets.
- Remains of the Merrimac Street Wharf may exist in the Project Area. It was located in the former Santa Fe Railroad yard, along Merrimac Street, between Third and Georgia Streets.

Southern Waterfront Subarea

The following is largely summarized from a report by David Chavez and Associates, entitled "Archaeological Resources Investigations for the Waterfront Plan EIR, San Francisco, California: Southern Waterfront," dated January 1995.

General History

Like the vast majority of the Project Area, the Southern Waterfront subarea is composed almost entirely of reclaimed land, excluding relatively small areas formerly known as Mission Rocks, the Point of Rocks and Potrero Point (formerly called Point San Quentin). Most of the Southern Waterfront subarea was submerged beneath the Bay in prehistoric times through to the Gold Rush period and, in much of this subarea, until the 1960's. It includes the most recently filled portions of the entire Project Area. As this area remained largely submerged beneath the Bay throughout the Spanish and Mexican historical periods, and there is no indication of settlement or significant activity within the subarea at these times, no associated archaeological resources would be expected to occur here. Likewise, pre-Gold Rush settlement near Yerba Buena Cove was too distantly located to be expected to leave any remains within or near this subarea.

There are no prehistoric archaeological sites documented within or in the immediate proximity of the Southern Waterfront subarea. There is little potential for such resources to exist here as the area was mostly under water or estuary marshland during prehistoric times. The only natural landform where prehistoric cultural deposits may have existed was Potrero Point. However, the hill of this area was leveled, removing as much as 80 feet of soil and rock during the 1940's, and any archaeological resources that may have existed would have been removed and destroyed at that time. Inland of the Project Area to the west, closer to the former shoreline, a number of prehistoric sites have been discovered and documented that are associated with what was ormerly Islais Creek, the closest being approximately three to four blocks from the Project Area. utside of the Project Area to the south, a number of prehistoric sites have also been ocumented in the Hunters Point and the Candlestick Point areas.

rowth of the City following the Gold Rush eventually pushed development south along the aterfront. The filling of Mission Bay beginning in 1860 led to the displacement of ship uilding businesses further to the south. By the early 1860's at least one shipbuilder had settled long the shore of Potrero Point (approximately in the area between Twentieth and Twenty-third treets). The development of Long Bridge and the Potrero and Bay View Railroad quickly pened the formerly isolated southern part of the City to development, which began with ndustries.

he tidelands surrounding the original Potrero Point were extensively filled in between 1860 and e 1940's, like much of the Project Area, to such a degree that the original configuration is nrecognizable.[73] Potrero Point was a peninsula formed by a shoulder of the Potrero Hills xtending eastward into San Francisco Bay separating Mission Bay from Islais Creek. The steep opes of the point originally rose abruptly from the Bay surface to a height of about 100 feet or ore. Over one-half mile of the promontory was cut away and dumped as fill into the adjoining ission Bay and Islais Creek basins.[74] The steep point, however, did have the advantage of latively deep water near shore, providing a suitable location for shipping-related industries.

he extensive filling the subarea has experienced began during the 1860's and continued for out 100 years, in various locations at various times. Over this time the region developed into industrial waterfront area associated with lumber, railroad, shipbuilding, petroleum and rt/shipping industries.

e Pacific Rolling Mills was constructed along the eastern shore of Potrero Point in the late 60s. Over the next few years the slaughterhouses of Butchertown were displaced and ocated to an area south of Islais Creek. During the 1880's the Union Iron Works, a barrel mpany, a sugar refinery and a gas and electric station were established on Potrero Point, and t Arctic Oil Works was founded along Illinois Street to the north. Several boatbuilding erations were set up along the shore of Illinois Street during the late 1870's and 1880's, one of t shipyards persisting through to the 1960's. Community development followed industrial d velopment into the Potrero Point area through the late 1800's, with the construction of dwellings, boardinghouses, hotels, stores and saloons occurring on both the hill and the flatlands along Illinois Street.

The Pacific Gas and Electric Company (PG&E) Potrero Station was originally established at Potrero Point in 1872 and continues to the present, beginning as the City Gas Company and Metropolitan Gas Company which merged to form the San Francisco Gas and Electric Company. PG&E was established in 1906 when it assumed control of this and other local energy companies.[75]

Large-scale pier and terminal projects modernizing the port to foster the shipping industry occurred in the southern portion of the subarea throughout most of the early and mid-20th century, particularly in response to the boom in peacetime trade following World War II. These modern developments established the subarea by virtue of fill and construction.

The southernmost portion of the subarea extends from just above Twenty-fourth Street to Earl Street, including the Islais Creek Channel and Port property along the Channel. This entire area remained almost entirely unchanged up until the 1920's, and much of the area remaining unfilled and beneath the Bay until the 1950's and 1960's. The area is dominated by wharves, piers and container terminals that date from the 1920's to the mid-20th century. There is essentially no archaeological value to archaeological deposits which may exist related to current or former uses from this recent period.

Examples of Known and Potential Archaeological Resources

- Remains of early boatyards may exist in the subarea, such as the Twigg and Kneass Boatyards located east of Illinois Street between Seventeenth and Twentieth Streets.
- Deposits associated with prominent early industrial operations may exist in the subarea, notably the Pacific Rolling Mills, Union Iron Works, and, later, Bethlehem Steel Company, north of Twenty-first Street and south of Central Basin.
- Remains of the former PG&E Wharf, which extended northeast near the Cargo Way/India Street intersection, and associated remains may exist in the subarea.

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A. PUBLIC PLANS, POLICIES AND REGULATORY AGENCIES: COMPARISON

INTRODUCTION

This section describes the various substantive legislative, public plan, regulatory and policy changes proposed or necessary to implement the Waterfront Land Use Plan (WLUP) and compares the changes to existing law, plans, regulations and policies. The WLUP, together with the proposed conforming amendments, provide the basis for the development scenarios represented in Alternatives A and B; the scenario under the No Project Alternative assumes continuation of existing plans, policies and regulations. Therefore, most of the physical environmental effects that could occur as a result of these implementing conforming amendments have been identified through the EIR's analysis of the Alternatives assumptions as discussed in the Impacts sections. A few environmental effects that were not highlighted through the Alternatives analysis could occur through implementation of conforming amendments. These potential effects are either described in this section or referenced to the appropriate Impacts topic.

A summary description of conforming amendments to implement the WLUP is given in Chapter III, Project Description, pp. 37-46. At this time, the Port has proposed, for public review, detailed amendments to the San Francisco Master (General) Plan, and the San Francisco Planning Code and Zoning Map. The Port has more generally outlined possible changes to legislation or adopted plans or policies involving the Bay Conservation and Development Commission (BCDC) and public trust policies of the State Lands Commission. All of these amendments and potential changes that could be considered sufficiently substantive to raise policy issues or directly or indirectly cause potential environmental impacts are identified and their implications discussed in this section.

PROPOSED AMENDMENTS TO THE SAN FRANCISCO MASTER (GENERAL) PLAN

A summary of the comparison between existing and proposed General Plan policies is provided below. The discussion summarizes proposed substantive policy changes; other non-substantive General Plan amendments are proposed which are not specified in this summary. Copies of the complete set of proposed General Plan, Planning Code and Zoning Map amendments are available for public review from the Port of San Francisco, Ferry Building, Suite 3100, San Francisco 94111, (415) 274-0354. The potential environmental impacts associated with these proposed conforming amendments are incorporated into the analyses in the relevant topical sections contained in this EIR, most notably Land Use Impacts and Visual Quality Impacts.

The discussion below begins with a summary of the proposed amendments to the Northeastern Waterfront Plan (NWP), an Area Plan in the General Plan which establishes land use policy for four of the five subareas identified in the Draft WLUP. Because it covers so much of the Project Area, the NWP is involved with most of the proposed General Plan changes. Following the proposed NWP amendments is a summary of proposed amendments to the Commerce and Industry Element, the Central Waterfront Plan, and the Recreation and Open Space Element, the other area plans and Elements contained in the General Plan that would be affected by consistency and implementation amendments.

During the course of public review of the proposed General Plan amendments, further amendments may be proposed to respond to public comments which are received, or may be suggested as mitigation measures to address potentially significant adverse impacts. Any amendments not identified here and subsequently proposed would be subject to environmental evaluation prior to adoption.

Northeastern Waterfront Plan - Summary of Proposed Conforming Amendments

The NWP contains land use policies for the area from Municipal Pier at the north side of the City to China Basin Channel, and includes adjacent inland sites. The proposed amendments provide an updated description of existing conditions in the area, including changes in land uses, which are context for proposed changes in land use policy affecting Port property. These proposed amendments are intended to meet the existing overall goal of the NWP, "to create a physical and economic environment which will use the area's resources and potential in the manner that will best serve the needs of the San Francisco community" based on the following principles: "(1) provide for those uses which positively contribute to the environmental quality of the area and contribute to the economic health of the Port and the City; (2) preserve and enhance the unique character of the area, and take advantage of the unique economic opportunity provided by San Francisco Bay; and (3) provide the maximum possible visual and physical access to

San Francisco Bay while minimizing the adverse environmental impacts of existing and new activity."

Update of Existing Conditions/Changes in Land Use Patterns

Existing NWP policies are predicated on land use patterns that were in place almost 20 years ago, at the time the NWP was adopted. As a result, many of the amendments are proposed to the text of the Background section and Future of the Northeastern Waterfront section to describe the key events over the last 20 years and to present an updated statement of current conditions in the Plan area, including changes in land use on large tracts of property adjacent to the Port.

References to the former Embarcadero Freeway and associated transportation-related conditions are deleted and replaced with a description of the removal of the freeway and the roadway, and pedestrian, transit and other improvements under construction or recently completed along The Embarcadero as a result of the Waterfront Transportation Projects.

The amendments also include a discussion of economic and industry trends resulting in the departure of industrial, manufacturing and maritime-related operations from the NWP area, which have been replaced in large part by new mixed-use residential neighborhoods, general offices, open spaces (developed or planned) and recreational amenities in the Base of Telegraph Hill (Battery-Sansome office corridor), Ferry Building (Golden Gateway residential mixed-use development) and North of China Basin (various Rincon Hill and South Beach residential and mixed-use projects) subareas of the NWP. (Note: Proposed amendments include changing the name of the North of China Basin subarea to South Beach subarea.)

In light of these land use changes and industry trends, the proposed amendments acknowledge a decline in the viability of cargo-related operations in the NWP area. Proposed amendments include policies which continue to give priority to, and protect, cargo-related maritime operations for as long as they can be sustained on certain piers in the Base of Telegraph Hill subarea, but delete existing policies reserving other piers in the Base of Telegraph Hill and North of China Basin subareas exclusively for maritime operations. New proposed policies call for increased commercial and recreation-oriented maritime uses (e.g., ferries, cruise, excursion boats, recreational boating and water uses, historic ships), Bay-oriented commercial recreation and public assembly activities, and open spaces and public access on piers. Potential development that could occur under these new policies has been assumed under Alternatives A and B and analyzed in this EIR.

Summary of Amendments to General Objectives and Policies

The NWP contains 10 objectives and numerous policies addressing seven general topical areas which apply to the entire NWP area, and which establish a base for more detailed objectives and policies for specific subareas or sites: Land Use, Maritime and Industrial, Commercial, Residential, Recreation and Open Space, Transportation and Urban Design. The proposed amendments to these general objectives and policies are as follows:

- Land Use: Objective 2, Policy 4 would be changed from giving priority to creating open spaces in any non-maritime pier developments to promoting new commercial and recreational maritime operations, open space and public access improvements as part of major non-maritime pier developments.

- Maritime and Industrial: Objective 3, Policy 2, which currently calls for continuing maritime activities on Piers 35 through 9, Piers 26 through 38 and Pier 46B for as long as practical, would be deleted as a general policy. A policy of continuing cargo-related activities on Piers 15-17, 19-23 and 27-29 for as long as possible would be placed in the Base of Telegraph Hill subarea. The additional statement currently contained in this policy calling for the development of improvement plans and appropriate amendments to the NWP if any of the former-cited piers are not needed for maritime use is proposed for deletion.

- Commercial: Objective 5, Policy 1, which permits additional offices adjacent to, but of a lesser intensity than, those in the Downtown Office District, would be revised to also permit other commercial uses. Objective 5, Policy 3 would be revised to "allow" rather than "limit" general and specialty retail uses to that which will not significantly detract from the Downtown Retail District. Objective 5, Policy 4 would be revised to allow hotels under certain circumstances "if they complement adjacent uses," instead of "in combination with other use." Objective 5, Policy 5 which currently limits additional Bay-oriented commercial recreation and public assembly uses inland of the seawall, would be revised to encourage those uses on piers rather than on those inland sites, and that such developments should include public access and commercial and recreational maritime activities.

- Residential: Objective 6, Policy 2, which encourages housing consistent with maximum maritime development, would be deleted.

- Recreation and Open Space: Proposed amendments include a new policy under Objective 7 to provide amenities (e.g., public restrooms, drinking fountains, refreshment stands) which enhance public enjoyment of open spaces and public access areas. Objective 7, Policy 6 would be amended to require a substantial amount of public open space and peripheral public access in "major new mixed-use developments on piers, which include maritime and non-maritime uses," rather than in "any non-maritime development beyond the seawall." This policy would be further amended to add a statement calling for "connections between [pier] open spaces and public access areas to create a 'PortWalk' which is integrated with sidewalk and pedestrian improvements along The Embarcadero and the regional Bay Trail." Objective 7, Policy 8 would be revised to incorporate updated information reflecting the fact that the Pier 39 and South Beach Harbor marinas are now built; this policy would be further revised to "encourage additional locations for transient mooring to expand waterside access to the Northeastern Waterfront."

- Transportation: Objective 8, Policy 2 would be revised to add a statement encouraging shared parking at adjacent or nearby facilities.

- Urban Design: Objective 10, Policy 31, requiring that signs be approved by the Department of City Planning, is proposed to be deleted. Objective 10, Policy 35 would be revised to delete language calling for mooring of office-oriented historic ships at Pier 3 and commercial recreation-oriented ships at Pier 24, in deference to site-specific use policies contained in the NWP subarea sections (described later). The portion of Policy 35 regarding siting criteria for mooring historic ships is proposed to be retained but merged with Objective 10, Policy 36, which addresses other historic ship siting criteria.

Summary of Amendments to Subarea Objectives and Policies

As currently organized, the NWP contains descriptions of each of the four subareas, plus that for the Embarcadero Corridor, which are separate from the subarea objectives and policies. The proposed amendments, described below by subarea, provide an updated statement of current conditions as well as policy changes to describe future land uses consistent with the WLUP. In addition, the subarea descriptions are proposed to be moved to precede their corresponding objectives and policies, rather than being retained in their current format of preceding the overall NWP goal statement. Furthermore, the subarea boundaries are proposed for modification to delete the following sites and their associated policies from the NWP because they have been included in the more recently adopted Downtown and Rincon Hill Plans, which cover areas adjacent to the Northeastern Waterfront: Assessor's Block 3744 (Hills Brothers Coffee site, now included in the Rincon Hill Plan; Assessor's Blocks 3716 and 3741 (Rincon Annex and proposed Gap office building, which have been or will be developed by the Redevelopment Agency and which are subject to policies in the Downtown Plan; and a portion of Assessor's Block 3715 along Steuart Street (containing various offices, hotels, and other uses subject to the Downtown Plan).

Fisherman's Wharf (Municipal Pier Through Pier 39 and Adjacent Inland Areas, Objectives 11-14). The existing policies which encourage the retention and expansion of the fishing industry would not be amended. However, Objective 11, Policy 1a would be added calling for efforts to maintain the fishing industry character of Fish Alley. Objective 11, Policy 2, which specifies uses for Hyde Street Pier and Fish Alley, would be amended to permit other maritime and non-maritime adaptive uses of Fish Alley facilities if there is insufficient fishing industry demand, provided that such uses do not generate heavy traffic or preclude the return of fishing industry businesses to the area. Policy 2 also currently specifies commercial office, hotel, residential, retail, institutional and parking uses for Pier 45. The proposed amendments would create a new Policy 2a to address Pier 45 separately from the Hyde Street Pier and Fish Alley, and revise the list of land uses encouraged for this facility to instead give priority to fishing industry uses in Sheds B and D of Pier 45, and to permit maritime offices; retail, research, educational assembly and entertainment and institutional uses; parking; and visitor centers compatible with the fishing industry in Sheds A and C. Objective 11, Policy 3, which calls for preserving the maritime character of Fish Alley, would be amended to allow development of a museum of the fishing industry, or of Wharf history in the Alley or elsewhere in the Wharf. Objective 11, Policy 5, which encouraged the development of a marina in the Pier 41 to 37 area (resulting in the Pier 39 marina), would be amended to promote new and expanded maritime operations such as recreational boating, ferries and excursions, historic ship and ceremonial berthing.

Objective 12, which calls for strengthening the area's attraction as a water-oriented commercial recreation and public assembly center would be amended to delete language which directs the expansion of this type of activity to the east and limits additional concentration of such activities west of Powell Street. The objective, as revised, would read (proposed addition is underlined): "To strengthen the area's attraction as a water-oriented commercial recreation and public assembly center by attracting new revenue-generating uses to help support and subsidize maritime and public activities and developing uses which would generate activity at times other than the existing peak periods." Objective 12, Policy 1 is proposed for deletion, as it provided direction which has been incorporated into the subsequent development of Pier 39.

A new Objective 12a is proposed to "encourage activities which will facilitate the use of the area by local residents and diminish the Wharf's image as a 'tourist-only' attraction." Two new policies would be added under the new objective to: (1) encourage activities such as arts, education, historical and recreational facilities and public assembly to increase the appeal of the Wharf to local residents; and (2) encourage additional office uses to diversify the tourist area and provide non-tourist season patronage of Wharf shops and restaurants.

A new Policy 1a, revisions to Policy 2, and a new Policy 2a under Objective 13 are proposed which would promote efficient new parking and loading facilities and improve utilization of existing parking; and study complementing measures such as use of shuttle buses, and alternate travel modes and facilities to serve Wharf activities. In addition, a new Policy 4 is proposed to promote water taxi service from the Wharf to other waterfront locations.

Revisions are proposed to Objective 12, Policy 3 and Objective 14, Policy 3, both of which call for developing a major open space and public access areas by replacing parking in the area bounded by Taylor and Jefferson Streets and the water's edge. The proposed revisions would condition the development of that open space upon further efforts to resolve the needs of area businesses which rely on that parking; and allow consideration of an appropriate level of revenue-generating uses for current tenants holding long-term leases on portions of this area in exchange for developing public access or open space improvements.

Base of Telegraph Hill Subarea (Pier 35 Through Pier 7 and Adjacent Inland Areas, Objectives 15 - 19). Objective 15 and Policy 1, which follows, currently are geared to retaining Piers 35 through 9 as active maritime piers. The proposed amendments would revise Policy 1 to maintain existing cargo-related operations on Piers 27-29, 19-23, 15-17 for as long as possible, but establishes criteria to be considered if any of these facilities are no longer viable exclusively for maritime operations, before any of these facilities could be transferred out of cargo-related use. Objective 15, Policy 2 currently identifies cruise operations as the priority use for Pier 35 and promotes improvements to that facility to accommodate modern cruise terminal operations. The proposed amendments replace this language with a policy promoting commercial and recreation maritime activities on piers in this subarea no longer needed for cargo shipping operations, which would include cruise operations as well as others, and which may be complemented with Bay-oriented commercial recreation uses and public access improvements.

Objective 17, Policies 3 and 4 currently encourage limited commercial development to generate activity during evenings and weekends, but which does not constitute a major recreation or entertainment center or is not as intensive as activities in the downtown or Fisherman's Wharf. Proposed amendments would merge these two policies into one and revise the language to encourage moderate commercial development to activate the waterfront, but still developed to a lesser intensity than present in downtown or Fisherman's Wharf. In addition, two new Policies 3a and 3b would be added calling for (1) the design of development on Seawall Lots 323 and 324 to highlight the intersection of Broadway and The Embarcadero as an orientation point for the waterfront and as an approach to Chinatown and North Beach; and (2) the coordination of designs for new developments on adjacent piers and inland sites to enhance and unite the waterfront and the rest of the City. Objective 17, Policy 5, currently calling for minimizing the intensity of automobile activity, limiting or prohibiting auto-oriented uses, and limiting development of new parking, would be revised to minimize the intensity of automobile activity by promoting mass transit as a primary transportation mode, and to use existing parking facilities efficiently in order to limit the amount of new parking necessary as part of new development. A new Policy 7 is proposed calling for public improvements (e.g., rest rooms, information kiosks, pushcart food vendors) to enhance public enjoyment of Pier 7.

A new Objective 18, Policy 2a would be added calling for the design of transportation access to new developments which will minimize congestion on Bay Street, Broadway and The Embarcadero.

Ferry Building Subarea (Pier 5 to Pier 22½ and Adjacent Inland Areas, Objectives 20-25). Objective 22, which calls for a limited amount of non-maritime development to generate waterfront activity, to provide visual and access improvements and to produce revenue for the Port, would be revised to allow a combination of non-maritime development with commercial and recreational maritime uses and public access improvements to achieve the same benefits. A new Objective 25a is proposed to design new improvements in a manner which restores and enhances connections between the City and the waterfront.

Policy 1 for Pier 7 was relocated into the Base of Telegraph Hill subarea and revised as summarized above, and Policy 2 would be deleted because it has been superseded by the subsequent development of the Pier 7 public access pier. Two new policies would be proposed to maintain the existing Golden Gateway residential community with neighborhood serving retail uses, and maintain the Sidney Walton Park. Pier 5, Policy 1 and a portion of Policy 2 would be deleted because those portions have already been implemented in the rehabilitation of the Pier 5 bulkhead building.

Policies 1, and portions of 2, 3 and 5 for Pier 3 would be deleted because they are either superseded, or specify office and community facility uses and building design development program details for these uses which no longer are proposed for this site. The proposed amendments would revise Policy 2 to allow cultural, assembly and entertainment activities which should take advantage of expanded public transportation services in the subarea. Policy 4, which outlines public access and open space improvements which were considered along with office and community facility uses on the site, would be revised to call for public access improvements contributing to the development of PortWalk. Pier 3, Policy 7, which calls for permanent mooring of two office-oriented historic ships, would be revised to also promote other new maritime attractions and waterside access, including historic ships, as part of new development on the pier. Pier 3, Policy 8, which specifies use programs for the historic ships, is proposed for deletion as too precise for a General Plan.

Pier 1½, Policy 1 would be revised to allow small-scale cultural, community, and retail uses in addition to museum and office uses currently designated for this facility. Pier 1, Policy 2, which permits mainly office use with galleria/exhibit space and minor commercial recreation uses, would be revised to permit commercial recreation uses, maritime offices, and excursion boat operations.

Ferry Building, Policy 1 would be revised to delete language calling for the addition of two new wings to the building. Policy 2, which specifies uses in the Building, would be revised to allow public spaces (e.g., exhibit and civic displays, passenger waiting areas) and a mix of office and commercial recreation uses, and encourages the use of themes to relate to the current and historical civic, maritime or international trade functions of the Building. Policy 4, which calls for a plaza in front of the Ferry Building, would be revised to reflect current planning efforts to create a plaza as a central and integral part of the Mid-Embarcadero area. A new Policy 4a is proposed calling for development of a downtown ferry terminal at the Ferry Building that allows access by multiple operators. Policy 5, which discusses pedestrian access, would be revised to delete a specification for a 10,000- to 20,000-square-foot walkway, and to add language calling for improved and expanded access to accommodate waterborne transit services. Policy 6, which addresses appropriate uses for the Ferry Plaza, would be revised to permit a regional transportation center and convenience retail services for commuters, and to delete the statement calling for relocation of the existing ferry piers to the south side of the BART platform.

Agriculture Building, Policy 1 would be revised to delete food hall and dining club use designations, and replaced with cultural, community or commercial recreation and general office use designations, and allow for waiting areas for ferry passengers.

Policy 2 for the area between the Agriculture Building and Pier 22½, which promotes maintaining open waters and the addition of transient boats, would be revised to specify that the transient boating facilities and operation not conflict with other waterborne transportation services in the area. The "Inland Site" would be renamed "Rincon Point Park"; Policy 2, which addresses design details for the restaurant use for the park, would be revised to allow consideration of other retail services to park users as an alternate use. The Rincon Point/South Beach Redevelopment Plan might also have to be amended to allow a use other than a restaurant at the Rincon Point Park. Retail uses other than restaurants are likely to generate similar or fewer person-trips spread more evenly through the day. This EIR's analysis assumed considerable retail growth in this general area (at least 90,000 square feet net new growth in the Ferry Building and South Beach/China Basin subareas combined under all Alternatives) and transportation and other impacts have been assessed accordingly. Therefore, on both a localized and a more areawide level, this EIR describes the potential general and cumulative impacts that could occur if such a Redevelopment Plan change should occur.

North of China Basin (Proposed to Be Renamed "South Beach") Subarea (Pier 22½ to China Basin, and adjacent inland area, Objectives 26 and 26a-c). Objective 26, which calls for enhancing the economic vitality of the subarea for maritime and residential uses, would be expanded to include commercial and recreational maritime, maritime support, and commercial uses. In addition, three new Objectives 26a-c are proposed calling for public-oriented commercial recreation uses, a continuous system of open spaces as part of new development that would connect with new pierside public access created as part of new development, and a high standard of design to establish an "architectural identity" for the subarea and which complements inland development. Policies 1 and 3, which specify a public access and development program for Pier 24, which has since been condemned and the pier shed demolished, would be deleted.

Pier 24, Policy 2, which specifies desirable uses for Pier 24, would be extended to Piers 24-28, and revised to allow specialty retail, and call for significant public access improvements which connect with and complement the Embarcadero Promenade and Rincon Point Park. Two new policies for these piers have been proposed which would preserve views of the Bay Bridge and water views from Harrison Street, and which call for improving shoreline appearance by removing or repairing condemned Pier 24.

The policy calling for the retention of the Hills Brothers Coffee Building is proposed for deletion, because this site is now included in the adjacent Rincon Hill Area Plan, which also promotes the preservation and adaptive reuse of the buildings. Policy 2 under Blocks 3766-3771, calling for preservation of Hathaway's Warehouse, would be revised to also allow off-street parking adjacent to the building to serve parking demand generated by development on nearby piers. Policy 3, which calls for parking, truck and rail access to support and enhance maritime uses on adjacent piers, is proposed for deletion as out of date and inconsistent with proposed WLUP uses. Five new policies are proposed for Piers 30-32 and Block 3771 (recently modified to include former Block 3770), which would promote mixed-use maritime and commercial recreation, public access (including removal of condemned Pier 34) and a limited amount of accessory parking on Pier 30-32. One of the new proposed policies calls for development of Block 3771 (residential or hotel, mixed with commercial activities), which provides a transition between inland residents and public-oriented activities on the waterfront. Another policy encourages activities which generate peak traffic volumes outside the commute periods.

Existing policies for Piers 40-46A, which would be renamed "Piers 36, 38, 40 and South Beach Harbor," would be updated to reflect the development of South Beach Harbor. Two new policies are proposed, to (1) promote uses on Piers 36 and 38 to support the recreational boating and water uses at Pier 40 and South Beach Harbor; and (2) consider the removal of Pier 36 and associated shoreline improvements.

Pier 46B, Policy 1, which calls for predominantly residential mixed use development and parking, would be revised to allow assembly and entertainment or commercial recreation activities while continuing waterside maritime operations. The revisions also call for consideration of mixed use commercial and residential uses on Pier 46B in combination with Port Seawall Lot 336 and a portion of Seawall Lot 335 if the Mission Bay Plan for adjacent sites is amended to replace office and retail uses with predominantly residential and related commercial services. A new Policy 1a is proposed to encourage the development of public access improvements to connect Pier 46B with South Beach Harbor, South Beach Park and the Third Street Bridge.

Glossary of Terms

The Glossary has been expanded to include additional definitions referenced in the NWP. The definition of "maritime" is proposed to include recreational uses such as recreational boating and marinas; the existing definition specifically excludes these uses, reflecting an emphasis on industrial maritime uses. Definitions of other terms in the WLUP, such as cargo shipping, PortWalk, and maritime support services, are proposed to be added to the NWP. The proposed changes would make the NWP definitions consistent with that in the WLUP.

Commerce and Industry Element - Summary of Proposed Conforming Amendments

The Commerce and Industry Element establishes policies that address the broad range of economic activities, facilities and support systems that constitute San Francisco's employment and service base. It is organized by economic sector, including "Maritime," which is the section in which all of the substantive conforming amendments are proposed.

Maritime Objective 5 would be revised to update the factors which have contributed to the decline in cargo shipping activity in San Francisco. Objective 5, Policy 2, which calls for focusing Port investments on improvements in areas in which San Francisco has a natural advantage, would be revised to acknowledge San Francisco's disadvantages regarding container shipping operations, but would call for pursuing niche cargo business opportunities which do not rely heavily on freight rail service. Policy 3, calling for aggressively marketing existing maritime facilities, would be revised to also allow interim leases for non-shipping operations until these facilities can be used for maritime uses. The potential impacts of this and other policies that would allow interim uses are described in this EIR, especially in relation to Alternative A, which emphasizes interim uses on underutilized or vacant sites in the Project Area.

Objective 5, Policy 5, calling for adequate funding for Port capital investments and operating expenses, would be revised to state that Port expenses will exceed revenues unless new revenue-generating uses can be developed on property which is surplus to maritime industry needs. Further revisions are proposed to reflect the fact that development revenues enable the Port to pay for facility maintenance costs, and expanding maritime and open space/public access improvements, to meet its Public Trust responsibilities. Policy 8, calling for maritime activity which complements visitor activity and resident recreation, would be revised to include specific reference to commercial and recreational maritime activities such as excursion boats, ferries, water taxis which should be incorporated into new waterfront commercial recreation developments.

Central Waterfront Plan - Summary of Proposed Conforming Amendments

The Central Waterfront Plan (CWP) contains land use policies from China Basin Channel to the north side of Islais Creek, and includes the Islais Creek Turning Basin. The proposed amendments in large part derive from changes in the cargo industry that have reduced the extent of these activities in the CWP area.

Proposed amendments to the Background and Conditions and Trends sections (which precede the CWP objectives and policies) document changes in land uses in various Port facilities, and explain industry changes and trends that have (1) led to a decline in cargo activity at the Port of San Francisco, and (2) made it difficult for the Port to compete for future intermodal container shipping business. While the Port is marketing its facilities to cargo shipping operators that do not heavily rely on intermodal (ship-to-rail) transport, proposed amendments would allow interim uses of vacant or underutilized cargo-related facilities to raise some revenue until they are needed for cargo-related purposes. As noted under the Commerce and Industry Plan amendment proposals above, the potential impacts of this and other policies that would allow interim uses are described in this EIR, because development of interim uses was specifically assumed, especially for Alternative A.

The CWP includes five subareas (Showplace Square, North Potrero, Central Basin, Islais Creek and Lower Potrero), plus the area subject to the Mission Bay Plan. The Central Basin and Islais Creek subareas include Port property, and are the subject of substantive amendments.

Central Basin Subarea (China Basin Channel through Warm Water Cove, Objectives 15 - 18)

A new Policy 3 would be added to Objective 15 calling for the preservation and rehabilitation of three Union Iron Works Buildings, permitting revenue-generating commercial and industrial uses to finance the rehabilitation costs, which must be compatible with ongoing ship repair and other potential future maritime and industrial uses. Section V.N., Environmental Impacts, Historic Architectural Resources, p. 636, discusses implications for the Union Iron Works group of historic buildings.

Islais Creek Subarea (Former Western Pacific Railyard, Pier 80 and the North Side of Islais Creek, Objectives 19 - 21)

Objective 19, Policy 1, which calls for modernizing Pier 80 as a container terminal and acquiring the former Western Pacific Railyard for container terminal expansion, would be revised to maintain Pier 80 as a container terminal (modernization has already occurred), and to allow other types of cargo shipping or interim uses when it is not in use for that intended purpose. The proposed amendments also would allow compatible maritime, industrial or commercial uses on the former Western Pacific site, rather than reserving it exclusively for container cargo terminal operations.

Objective 20, Policy 1 would be revised to allow a small boating dock or launching facility rather than a marina in the Islais Creek Turning Basin area.

Recreation and Open Space Element - Summary of Proposed Conforming Amendments

The Recreation and Open Space Element contains objectives and policies dealing with all aspects of the City's recreation and open space system. The objectives and polices are organized into five sections: the Regional Open Space System; the Citywide Open Space System; the Shoreline; the Neighborhoods; and Downtown. Citywide System Objective 2, Policy 2 discusses existing public open space, and would be modified to more clearly distinguish between designated parks and open space mapped in the Element from public land which is undeveloped, and to encourage financing programs enabling creation of new parks. The rest of the proposed conforming amendments affect the Shoreline section. The majority of the proposed amendments would provide an updated statement of existing conditions and recent events, consistent with the updated information proposed for the Northeastern Waterfront Plan, as summarized above.

Shoreline, Objective 3 would be revised to update the statement of current and past efforts which have resulted or will result in recreation and open space improvements along the shoreline, primarily in the northeastern waterfront (e.g., the Embarcadero Promenade and landscaping improvements, acquisition and development of Pier 7, South Beach and Rincon Point Parks). Objective 3, Policy 1, Land Use, which defines "priority land uses," "restricted land uses," and "prohibited land uses" would be revised to (1) add ship repair and commercial and recreational maritime activities to the priority land use definition; (2) provide a more comprehensive list e.g., addition of commercial recreation and public assembly activities) of restricted land uses which would be appropriate only in areas so designated in the General Plan; and (3) clarify that prohibited land uses are non-water-dependent industry or commercial uses which do not further maritime commerce or public recreation and enjoyment of the waterfront.

The description of the specific open spaces contained in the northeastern shoreline would be amended to include a PortWalk, pierside open spaces created as part of major new development projects which would be connected with public sidewalks, and pedestrian improvements along The Embarcadero. The Fish Alley and Vicinity policy language would be modified to delete reference to potential development of a fish hall on Hyde Street Pier, which is no longer contemplated. Pier 45 policy language would be modified to delete reference to pier perimeter public access, instead directing that it be provided on the east side of the pier. Existing text calling for development of a Ferry Plaza and demolition of the Embarcadero Freeway would be updated and revised to call for a plaza on the west side of the Ferry Building, which would provide connections between the City and the Bay and other open spaces and public access areas between Pier 1 and the Agriculture Building.

The description of the specific open spaces contained in the eastern shoreline would be revised to delete text calling for alternate sites for the Pier 52 public boat launch and Warm Water Cove if either of those open spaces were redeveloped as shipping terminal facilities. The Pier 52 policy also would allow for ancillary boating facilities, commercial services, and inland parking for boat trailers. These amendments would reflect a recent amendment adopted by the Metropolitan Transportation Commission and BCDC for the Bay Area Seaport Plan, which deleted Pier 52 and Warm Water Cove as potential terminal sites.

PROPOSED AMENDMENTS TO THE SAN FRANCISCO CITY PLANNING CODE AND ZONING MAP

The Port will request amendments to the City Planning Code and the Zoning Map in order to implement the policies of the WLUP. The amendments to the Zoning Map would change the use classification, or the boundaries of a special use district overlay zone affecting some of the Port's property. In addition, amendments to the Zoning Map may be proposed which affect building height limits applicable to certain sites. Proposed amendments to the text of the City Planning Code generally would change the controls which govern property in the various use districts, amend requirements for conditional use authorization, and impose a design review requirement for certain types of new development.

The text amendments would primarily affect the provisions of Planning Code Sections 240, 240.1 and 240.3 which establish land use controls within the Northern Waterfront Special Use District (NWSUD). The NWSUD currently includes three district subareas: NWSUD No. 1 (Section 240.1), covering all piers from Fisherman's Wharf to Pier 24 at the Bay Bridge, and a few Port-owned seawall lots near Fisherman's Wharf; NWSUD No. 2, covering inland sites not owned by the Port in the Fisherman's Wharf area; and NWSUD No. 3 (Section 240.3), covering all other Port seawall lots as well as other inland property bounded by Bay Street on the north and Broadway on the south at the base of Telegraph Hill. The Port is proposing amendments only to those sections that govern Port-owned property, NWSUD No. 1 and No. 3. In addition, proposed amendments to the use district tables in Article 2 of the Code would more clearly identify maritime uses as principal permitted uses in the M-2 (Heavy Industry) district. Before describing the text amendments in more detail, the proposed amendments to the Zoning Map will be explained, in order to make clear which sites would be affected by the various text amendments.

Proposed Zoning Map Amendments

Property included in the Project Area is classified on the Zoning Map in three ways: use districts, height and bulk districts, and special use districts. Property within the Project Area is classified under one of five use designations:

P	Public Use
RC-4	Residential - Commercial Combined, High Density
C - 2	Community Business
M - 1	Light Industry
M - 2	Heavy Industry

All but a few parcels within the Project Area are classified as C-2 or M-2. The maps in Section IV.B., Environmental Setting, Land Use and Zoning, pp. 123-156, show the boundaries of the existing use district designations, accompanied by text describing typical uses in each zoning district.

The proposed amendments would change these use district designations at only one location. The property located at the base of Mariposa Street, between Illinois Street and the Bay Assessor's Block 3941) that is now classified as P (Public) is proposed to be reclassified as M-2, onsistent with the designation on adjacent Port-owned properties. The P District is intended for roperties owned by governmental agencies that are in public use. Existing uses in this area nclude a variety of maritime and commercial recreation uses, such as a marina, boat repair and aunch facilities, two restaurants and a fish processing facility. The WLUP policies call for a ontinuation of such uses. Those uses would not be consistent with a P District designation, thus a map amendment is proposed to reclassify the area to M-2 (Heavy Industry) consistent with the adjacent property.

The Port has not proposed any amendments to existing height and bulk district limits at this time. However, the WLUP acknowledges that if a stadium or arena were to be proposed for a site on and near Pier 46B, then an amendment to the 40-X height and bulk district designation would be required. In the March 1996 election, San Franciscans voted to change the height and bulk limit to 150-X to allow consideration of a ballpark for the San Francisco Giants. Environmental implications are discussed in Chapter VII, Variants to the Alternatives, beginning on p. 672.

Some amendments to the height and bulk district designations may be identified through an ongoing Port planning effort to further define urban design guidelines for the Project Area. For example, Pier 7, the public fishing pier, is classified as 65-D-1. It is possible that this site would be reclassified to a lower height limit to be consistent with the existing use. Such future proposals would undergo evaluation to determine whether additional environmental review would be appropriate. In addition, further amendments could be identified as mitigation measures to the extent necessary to mitigate potential significant adverse impacts.

The boundaries of the NWSUD would be altered substantially under the proposed amendments. The NWSUD No. 1, which now covers piers from Fisherman's Wharf to Pier 24, would be extended to include Piers 26, 28, 30-32, 34, 36, 38 and 46B; Seawall Lots 311/312, 313 and 314 would be removed from the SUD and placed in NWSUD No. 3. The NWSUD No. 2 is not proposed to be amended. The NWSUD No. 3, which now covers Port-owned seawall lots and non-Port inland properties between Bay Street and Broadway, would be amended to (1) incorporate Port-owned Seawall Lots 311/312, 313 and 314, which are now included in NWSUD No. 1; and (2) extend along The Embarcadero to include all Port-owned seawall lots in the South Beach area to China Basin Channel (Seawall Lots 328-336). The word "Northern" would be dropped from the title, thus the district would be called simply the Waterfront Special Use District. The result of these proposed amendments would be to include all Port properties bayward of Jefferson Street and The Embarcadero from Fisherman's Wharf to China Basin Channel in NWSUD No. 1, with all inland Port properties within those boundaries included within the NWSUD No. 3. Port property south of China Basin Channel would not be affected by these proposed amendments. On March 26, 1996, San Francisco voters approved amendment of the City Planning Code and Zoning Map to create a Northeast China Basin Special Use District bounded by King Street, Second Street, China Basin Channel and Third Street. The Special Use istrict permits a ballpark with a maximum capacity of 45,000 and assembly and entertainment nd supporting uses at that location, subject to conditional use authorization by the City Planning ommission. The Zoning Map is amended to change the height limit for the District from 0 feet to 150 feet.

roposed Planning Code Amendments

mendments to the text of the City Planning Code would correspond in many respects to the se, height and bulk, and special use district designations on the Zoning Map. As stated earlier, e proposed amendments would primarily affect the provisions of Section 240, which stablishes land use controls within the NWSUD. If the proposed amendments to the Zoning ap described above were adopted, the controls applicable within the Waterfront Special Use istrict would cover piers and seawall lots between the Bay Bridge and China Basin Channel at are not currently subject to those regulations.

he Draft WLUP identifies as a key implementation goal a streamlined and simplified design eview process for development projects which would seek early, integrated review by the pplicable agencies which have design review jurisdiction over the affected development site, ther than the current process of sequential, separate reviews by each individual agency. To dress this goal, the Port proposes Planning Code amendments that would establish a waterfront esign review process to review the architectural and urban design of certain types of new evelopment within WSUD No. 1. It is intended that the process would involve representatives f the Planning Department, Port, and BCDC (as applicable). However, details regarding rticipation, notice requirements for public hearings and other procedures have not yet been entified. It is possible that refinements to this approach, or other mechanisms for achieving is implementation goal, will be identified in the course of the public review of the proposed lanning Code amendments.

ithin the WSUD No. 1, waterborne commerce and navigation, and industrial, commercial and her operations directly related to the conduct of waterborne commerce or navigation, would ntinue to be permitted as principal uses. The current requirement for conditional use thorization for all other uses would be amended such that only uses designated as conditional the underlying use district (e.g., C-2, M-1) would require such authorization. In addition, the iteria specified in Section 240.1 to be considered by the Planning Commission in addition to at set forth in Section 303c is proposed to be deleted. A new set of provisions is proposed.

described in the following paragraphs, that would identify permitted and conditional uses and specify new procedures.

New uses that occurred within an existing structure (except for associated outdoor accessory parking, public access or open space required to support the new use), were permitted in that use district, were identified as Acceptable Land Uses in the WLUP, and involved no changes to the exterior of the structure (except for repairs or use-related signage or canopies) would also be permitted as principal uses. Any other new use that is listed as a permitted use in the underlying use district which would not operate within an existing structure would require approval through the proposed waterfront design review process, would have to be an Acceptable Land Use under the WLUP, and would have to be consistent with the General (Master) Plan.

Any use listed as a conditional use in the underlying use district and listed as an Acceptable Use under the WLUP would require approval by the City Planning Commission as a conditional use under Section 303(c) of the Planning Code. The architectural and urban design issues related to the proposed use would require review through the waterfront design review process.

Taken together, the proposed changes in WSUD No. 1 would reflect the matrix of Acceptable Land Uses contained in the WLUP that formed the basis for developing the Alternatives analyzed in this EIR. The proposal to allow as principally permitted uses those uses other than waterborne commerce and navigation would implement the land use proposals of the WLUP, the environmental and policy/plan/legislative consequences of which are described in this EIR.

The elimination of Section 240.1 criteria from conditional use considerations in WSUD No. 1 would have the effect of eliminating the following criteria from explicit Planning Commission consideration: provision of maximum feasible public access; limitation of water coverage from the Hyde Street Pier to Pier 46 to not exceed the degree of coverage by piers existing as of the effective date of Section 240.1 (1978); construction of new piers so that the water's edge shall be maintained at the sea wall where feasible; development over water generally on piers or platforms rather than (solid) fill; and provision or maintenance of view corridors along streets into the Bay, and panoramic views, in accordance with the Master Plan. All of these policies except the last pertain to jurisdiction exercised by BCDC. Elimination of these criteria would have the effect of eliminating duplicative policies of limiting Bay fill which are strongly enforced by BCDC. Therefore, there are no obvious environmental impacts that could occur that have not been identified through the Alternatives analysis in this EIR. Regarding the last riterion, its elimination could have the effect of weakening protection of view corridors into the ay and panoramic views. While the Northeastern Waterfront Plan contains policies to protect, nhance, and create view corridors (Urban Design Objective 10, Policies 2, 5b, and 11), in the ontext of numerous and sometimes conflicting General (Master) Plan policies that may be pplicable to future development projects, adherence to policies protecting views may not be as trong as the current Planning Code provision that affirmatively requires a conditional use nding to be made regarding view protection. Section V.G., Environmental Impacts, Urban esign and Visual Quality, pp. 533-547, discusses the implications and proposes mitigation (in hapter VI, Mitigation Measures).

ewer changes are proposed for the provisions governing property within the WSUD No. 3. urrently the Code (Section 240.3) requires a conditional use for any development which cludes an area of at least three acres, and specifies special criteria to be used by the City anning Commission in considering conditional uses (as described in Section IV.B., nvironmental Setting, Land Use and Zoning, pp. 129-131). This requirement would continue. ecause of the extension of the special use district to cover seawall lots in the South Beach area, e Port proposes to exempt parking spaces in lawful existence as of the effective date of the nendment (i.e., the parking lots across from Pier 30-32) from conditional use (as a site over ree acres) and screening requirements.

addition to the amendments proposed to the special use district provisions, the Port proposes amend the use district tables in Article 2 to clarify that maritime and directly related uses are incipal permitted uses in M-1 and M-2 districts. Currently the Planning Code does not ecifically identify such uses as permitted except in the special use district provisions now plicable only in the Northern Waterfront. This amendment would provide that maritime and ectly related uses are also principal permitted uses along the Southern Waterfront.

rther Planning Code amendments could be proposed over the course of the public process for view of the WLUP and implementing amendments. Some amendments may be suggested as tigation measures to address potentially significant adverse impacts. Any amendments not ntified here and subsequently proposed would be subject to environmental evaluation prior to ption.

PROPOSED AMENDMENTS TO BCDC LEGISLATION, PLANS, OR POLICIES

Implementation of the WLUP would require amendments to the San Francisco Bay Conservation and Development Commission's (BCDC) Bay Plan, San Francisco Waterfront Special Area Plan, and Piers 7-24 Total Design Plan. The scope of these changes is generally outlined in Chapter III, Project Description, pp. 37-46 and pp. 70-71. BCDC's jurisdiction and enabling legislation is described in Section IV.A, Environmental Setting, Public Plans, Policies, and Regulatory Agencies, pp. 95-102. This section compares the WLUP proposals and existing BCDC-related legislation, plans and policies.

The Port and BCDC have entered into a memorandum of understanding (MOU) which establishes a process for negotiating specific amendments to the Bay Plan, Special Area Plan and the WLUP to establish conformity between the WLUP and BCDC policies and regulations. These agencies are mutually interested in jointly developing conforming amendments which can be implemented by BCDC consistent with its responsibilities under the McAteer-Petris Act. However, to the extent it is determined that certain issues cannot be fully reconciled within this existing framework, it is possible that full implementation of the WLUP would require amendments to McAteer-Petris or other legislation.[1]

In general, Alternatives A and B assume various kinds of BCDC-related changes, as described in Appendix D. Therefore, the physical effects of carrying out these regulatory changes are reflected in the development and activity associated with Alternatives A and B and the environmental impacts that could result are described throughout this EIR.

Development and activity pursuant to the WLUP could require new fill to serve water-dependent uses. BCDC approval would be needed for all such Bay fill proposals. Although difficult to predict, a study of the cumulative new fill potentially required throughout the Project Area based on the land uses and activities assumed for the various Alternatives yielded an estimate of about four acres of new fill for the No Project Alternative and Alternative A, and about 13 acres of new fill for Alternative B. This fill would be proposed for water-dependent uses such as ferry terminals, cargo ship berths, boat launches, and recreational boat berths. New fill would probably total two acres or less for all subareas under any of the Alternatives except that the expanded cargo shipping scenario under Alternative B could require about eight acres of fill in the Southern Waterfront subarea.

New fill which may be needed to serve water-dependent uses is distinguished from replacement fill. The issue of at what point replacement or strengthening of pier substructures constitutes replacement fill is described in detail below. The amount of existing facility area that could constitute replacement fill has been estimated to be about 5 to 7 acres under the No Project Alternative, about 42 to 65 acres under Alternative A, and about 77 to 97 acres under Alternative B. Refer to Section V.B., Environmental Impacts, Land Use and Growth-Inducing Impacts, p. 403, for further discussion of replacement fill estimates and their underlying assumptions.

All Alternatives

Assumption 1: Many of the pierhead and bulkhead buildings would continue to be used for general office and other non-water-oriented uses. The bulkhead buildings are old, pile-supported structures that will, over time, require structural rehabilitation in order to continue in use. Under the No Project Alternative and Alternative A, these uses are assumed to continue in the pierhead and bulkhead structures, without any substantial building repairs. These structures currently are in BCDC's shoreline jurisdiction and therefore are not subject to BCDC use restrictions until the structures require “substantial repair”, at which time BCDC has jurisdiction over use. Unlike the No Project Alternative and Alternative A, the bulkhead or pierhead buildings under Alternative B would undergo substantial repairs and continue to be used for general office or other non-water-oriented uses.

Two BCDC laws and policies are implicated with this assumption as it is applied to Alternative B, which pertain to substantial repairs, replacement fill, and water-oriented use: a 1986 Deputy Attorney General informal opinion regarding substantial pier repairs; and Section 66605 of the McAteer-Petris Act regarding water-oriented use.

ursuant to the 1986 Deputy Attorney General informal opinion, any improvements to pile-upported structures (such as the pierhead and bulkhead buildings) which are determined to be substantial repairs” are treated as "replacement fill".[2] Uses on replacement fill are regulated by CDC under its bay jurisdiction. Section 66605 of the McAteer-Petris Act specifies that uses on ay fill (including replacement fill) be "water-oriented": “. . . further filling of San Francisco ay and certain waterways specified in subdivision (e) of Section 66610 should be authorized nly when public benefits from fill clearly exceed public detriment from the loss of the water reas and should be limited to water-oriented uses such as ports, water-related industry, airports, bridges, wildlife refuges, water-oriented commercial recreation and public assembly, water intake and discharge lines for desalinization plants and power generating plants requiring large amounts of water intake and discharge lines for desalinization plants and power generating plants requiring large amounts of water for cooling purposes or minor fill for improving shoreline appearance or public access to the Bay." Thus, the continuation or expansion of non-water-oriented uses in a rehabilitated bulkhead building would not be consistent with Section 66605 of the McAteer-Petris Act if it is determined that substantial repairs were required for the rehabilitation.

The conflict between Assumption 1 and Section 66605 is unclear because neither the 1986 Deputy Attorney General opinion nor BCDC's regulations specify when improvements to pile-supported structures constitute substantial repair, triggering the water-oriented use requirement. BCDC evaluates all projects involving pier restructuring on a case-by-case basis in permit applications. Where it determines that the structural work would be minor repairs, BCDC permits the pier and uses on the pier to remain in place. However, if the work involves complete removal and replacement of decking or support piling, or if it involves less extensive work that BCDC determines would nevertheless amount to substantially rebuilding the pier, the Commission treats the project as replacement fill.

The Port and BCDC will address these policy issues through the MOU process discussed on p. 384. One possible solution that may be applicable in certain situations is identified in Section V of the WLUP, which points out that Section 10704 of BCDC's Regulations allows BCDC to permit substantial repair of structures which are listed in the National Register of Historic Places, such as the Ferry Building and the Agriculture Building, without requiring that uses of the structures be water-oriented. The evaluation of the historical merit of pierhead and bulkhead buildings is underway, pursuant to the WLUP, providing for the possible subsequent proposal for National Register designation of qualifying structures and their eventual rehabilitation under Section 10704. However, these buildings are not covered by that Section 10704 currently. Other approaches are (1) clarification of the definition of "substantial repair"; and (2) determining that non-water-oriented uses in pierhead and bulkhead buildings (which have undergone substantial repair) meet the water-oriented requirement if they are included in larger, water-oriented pier developments (see further discussion below, under Assumption 8).

Alternatives A and B

Assumption 2: Existing water-oriented commercial recreation and public assembly uses on piers and wharves continue under all Alternatives, even if major structural repairs are required from time to time, without being subject to BCDC's Bay Plan replacement fill policy. Many of the restaurants, retail stores, and other water-oriented commercial recreation uses in the Port are on piers and other pile-supported structures. Over time, pier and wharf substructures supporting these uses will require reconstruction or major repairs in order to continue the established uses. Under Assumption 2, such repairs in Alternatives A and B would not be subject to the replacement fill policy (described further below), which would eliminate a requirement that potentially impedes maintenance of existing water-oriented commercial recreation and public assembly uses at the Port, and/or possibly causes substantial repairs to be financially infeasible.

Three BCDC laws and policies are implicated with this assumption: Section V of the Bay Plan pertaining to the replacement fill policy; the 1986 Deputy Attorney General informal opinion regarding substantial pier repairs discussed in Assumption 1; and Section 66602 of the McAteer-Petris Act, regarding water-oriented commercial recreation and public assembly uses.

Replacement fill projects are regulated by the Bay Plan replacement fill policy.[3] Such projects are viewed as first removing the pier, then building a replacement pier for water-oriented uses only. The replacement fill policy, in part: (1) limits the area of the replacement pier to less than the area being uncovered; and (2) limits the area of any Bay-oriented commercial recreation and public assembly uses on the replacement pier to no more than 50 percent of the area which has been uncovered. As described in Assumption 1, the 1986 Deputy Attorney General informal opinion states that substantial repairs to pile-supported structures constitutes replacement fill, with is subject to the replacement fill policy. However, there is no clear definition of "substantial repair."

The implication of the replacement fill policy and 1986 informal opinion for an existing pile-supported restaurant, for example, is that if any improvements (e.g. major utility upgrades or seismic-related improvements) were deemed substantial repairs, the improved restaurant area could be limited to 50% of the area of the original restaurant, with the remaining 50% dedicated to public access or open water. Alternatively, the improved restaurant could occupy (virtually) the same area of the original restaurant if the 50% public access requirement is satisfied off-site. The Port's concern is that under either scenario, the combined expense of the substantial repairs for existing water-oriented commercial recreation and public assembly uses; providing the increased public access; or reducing the occupied area of such uses could make it economically unfeasible for those tenants to stay in business.

A separate but related issue is whether it is desirable to implement regulations which have the potential to reduce the amount of area dedicated to existing water-oriented commercial recreation and public assembly uses. Under Section 66602 of the McAteer-Petris Act, "certain water-oriented land uses along the Bay shoreline are essential to the public welfare of the Bay Area, and that those uses include . . . water-oriented commercial recreation and public assembly. . ." The benefits to the public are preserved when existing water-oriented commercial recreation and public assembly uses are maintained and improved, which periodically may involve substantial repairs. To the extent the Bay Plan replacement fill policy inhibits the ability of existing water-oriented commercial recreation and public assembly uses to continue business by making substantial repairs prohibitive, Section 66602 of the McAteer Petris Act may not be fully implemented.

The BCDC-Port MOU discussions will address these issues involving substantial repair to existing water-oriented commercial recreation and public assembly uses.

Assumption 3: Under Alternatives A and B, public access requirements for projects that are proposed to exist only for an interim period would be less than requirements applicable to permanent uses. The WLUP concludes that some interim uses that would be developed on existing land and piers cannot support the cost of public access improvements that BCDC normally requires of permanent development in its jurisdiction. Alternatives A and B accordingly assume that BCDC would apply reduced public access requirements for some interim uses, including those on piers that require no repairs or only minor repairs to accommodate the use.

Assumption 3 has implications for Section 66602 of the McAteer-Petris Act, which states that development permitted within BCDC's jurisdiction, on the shoreline and in the Bay must provide "maximum feasible public access, consistent with a proposed project. . ." The Bay Plan and the San Francisco Special Area Plan policies on public access provide some direction but do not differentiate between public access for interim vs. permanent uses. In general, BCDC requires access open to the public both to and along the shoreline of project sites. While BCDC's public access policies as a whole tend toward generous, well-designed and improved public access areas, its plan and permit policies allow the Commission considerable flexibility in determining the amount and level of improvements of public access that are feasible and consistent for each individual project. Different public access design and improvement requirements for interim, adaptive uses would not necessarily conflict with BCDC's public access policies. The MOU between BCDC and the Port includes tasks to further develop the definition of "maximum feasible public access" to address the issues raised in Assumption 3.

Assumption 4: Under Alternatives A and B, some interim uses would be permitted for longer terms than BCDC has generally allowed. The WLUP would permit interim uses on piers north of China Basin Channel generally for periods of up to 10 years where necessary to amortize development costs of interim uses (longer lease terms could be negotiated through a public review process in exceptional cases). On the Southern Waterfront, the WLUP would allow 10-year leases, with exceptions for 20- to 30-year leases when necessary, to make productive use of the Port's lands not needed in the shorter term for maritime use. Alternatives A and B assume these longer terms would be permitted for interim uses when the need is demonstrated.

For areas which are not designated as port-priority use areas in the Bay Plan and BCDC/MTC Bay Area Seaport Plan, BCDC regulations are silent on the length of interim use terms that BCDC may permit. The Seaport Plan is described in more detail in Section IV.A., Environmental Setting, Public Plans and Policies, p. 99, and Appendix D., p. D-9.[4] The Seaport Plan, which pertains to Port lands designated for port-priority use in the Southern Waterfront subarea, contains findings and policies regarding interim uses. The Seaport Plan findings recognize that the Port is at a competitive disadvantage to attract cargo carriers and lacks the financial resources necessary to fully develop and use its marine terminals for many years (Findings 2 and 3, Seaport Plan p. 48). It therefore provides that "until such time as there is a demand for the Port's unused facilities" the Port should be able to lease its maritime lands for interim uses (Finding 6, Seaport Plan pp. 48-49). While the policy provides that interim uses must not inhibit the eventual cargo-related use of these areas, it provides that the length of interim uses should be determined on a case-by-case basis, and the cost and amortization period needed for a proposed interim use should be considered.

In summary, lease terms of up to 10 years generally, with exceptions of 20 to 30 years in port-priority use areas of the Southern Waterfront subarea under the WLUP, would not necessarily conflict with BCDC Seaport Plan provisions. However, the acceptability of interim uses that may be proposed within the area designated for terminal and support uses will also depend on the extent to which the nature of the proposed use and of the physical development associated with it might interfere with timely use of the sites for cargo-related purposes. It should be noted that, while the Seaport Plan designates large areas for marine terminal use and Port Priority Use, BCDC generally has little direct authority to reserve areas landward of its 100-foot shoreline band.

In its permit determinations on interim use of sites designated for water-oriented use, both within and outside of Priority Use Areas, BCDC has generally limited interim uses to terms of no more than five years at a time. BCDC would have to depart from that precedent to permit the interim use terms assumed in Alternatives A and B.

Assumption 5: Conforming amendments are adopted by the Port and BCDC to establish consistent land use policies. Currently, there are multiple conflicts between the uses permitted in BCDC's San Francisco Special Area Plan and those permitted in the WLUP. Alternatives A and B both preclude uses that are permitted by the Special Area Plan and permit uses that are not allowed by the Special Area Plan. For example, the Special Area Plan allows hotels on some piers, whereas hotel use is not permitted on piers at all under the WLUP. Conversely, the Special Area plan does not permit water-oriented commercial recreation and public assembly uses on Piers 9 to 35 as do Alternatives A and B. The Special Area Plan would have to be revised or eliminated to conform with WLUP use designations to permit full implementation of the WLUP. Reconciliation of these land use plans is included as one of the tasks in the MOU between BCDC and the Port.

Assumption 6: Conforming amendments are adopted by the Port and BCDC to eliminate conflicts with the Total Design Plan. Alternatives A and B currently include uses which conflict with several of the detailed provisions in the Total Design Plan, applicable to the area between Piers 7 and 24. The Total Design Plan, which is a part of the Special Area Plan, specifies locations, size and design features for development near the Ferry Building. The Total Design Plan would have to be revised or eliminated to permit full implementation of the WLUP. As with the Special Area Plan, the task of adopting conforming amendments to the Total Design Plan is included in the MOU between the Port and BCDC.

Alternative B

Alternative B includes major, primarily water-oriented commercial recreation, mixed use developments on replacement piers. The size, range of uses, and flexibility in location that are assumed for these projects affect the relationship of this Alternative to BCDC's regulatory program.

Assumption 7: Under Alternative B, water-oriented commercial recreation uses on replacement fill in some locations would be permitted to cover an area larger than 50 percent of the pier area removed. This assumption has implications for the Bay Plan replacement fill policy.[3] This assumption reflects the conclusion of the WLUP that larger revenue-producing components in some replacement fill development may be needed or desirable in order to finance pier removal and public access improvements, as well as help finance other trust-related development in the Port. This provision in Alternative B would conflict with the present Bay Plan replacement fill policy expressly limiting the extent of water-oriented commercial recreation and public assembly uses permitted on replacement fill to no more than 50 percent of the pier area removed. (See more detailed discussion of the replacement fill policy under Assumption 2.) The concept of modifying provisions of the replacement fill policy is included in the MOU between BCDC and the Port.

Assumption 8: Under Alternative B, some water-oriented mixed use developments contemplated in the Draft WLUP would be developed on piers that include relatively small amounts of existing office and other non-water-oriented uses. The BCDC law implicated in this Assumption is Section 66605 of the McAteer-Petris Act.

Alternative B assumes major pier developments that include a mix of uses. While the development overall would be water-oriented in nature (e.g. maritime uses, public access, water-oriented commercial recreation activities), there could be limited amounts of uses which by hemselves would not be considered by BCDC to be water-oriented (e.g. office, maritime office) hat would contribute to the financial and/or physical viability of the project. Section 66605 does not distinguish between individual or collective use in determining compliance with the water-oriented requirement. The MOU between BCDC and the Port includes a task to review the definition of water-oriented use to determine whether it would apply to the above situation. If it s determined to be consistent under Section 66605, this clarification of the water-oriented use efinition under the McAteer-Petris Act would parallel State Lands Commission interpretations which allow the inclusion of limited non-trust uses in mixed use projects which are determined overall to be consistent with the Port's Public Trust responsibilities. The Port's development efforts would be facilitated if BCDC and the State Lands Commission share a consistent approach in determining project conformance with their respective regulations.

Assumption 9: Under Alternative B, uses consistent with the public trust would be permitted on replacement fill. This assumption reflects the conclusion of the WLUP that uses that BCDC does not consider to be water-oriented but have been determined by the Port and State Lands Commission to be consistent with the trust should be permitted in replacement fill projects because they are consistent with the trust and they would contribute to the financial viability of permitted projects. Accessory parking and maritime offices are examples of such uses.

This assumption implicates Section 66605 of the McAteer-Petris Act which states that only water-oriented uses are allowed on Bay fill, and as currently interpreted precludes some uses which have been determined by the State Lands Commission to be consistent with the public trust (see Assumptions 1 and 8 for a more detailed description of Section 66605). Therefore, Alternative B would not be consistent with the present definition in Section 66605. As indicated above under Assumption 8, the MOU between the Port and BCDC includes a task to determine whether all public trust uses could be included in the definition of water-oriented uses.

Assumption 10: Under Alternative B there would be greater flexibility in locating replacement piers for water-oriented commercial recreation use than is now permitted by BCDC. The Bay Plan replacement fill policy requires that the fill removal and fill replacement in a replacement fill project occur in the same geographic vicinity, as set forth in the applicable Special Area Plan (Section (5)(f) of the replacement fill policy). The San Francisco Waterfront Special Area Plan defines three "geographic vicinities" for the waterfront: Hyde Street Pier through Pier 9, Pier 7 through Pier 24, and Pier 26 to India Basin (General Policy 2). A proposal to build a replacement pier project which involves fill removal in any one of the three geographic vicinities defined for San Francisco must be associated with the removal of a pier or other fill from the same area.

Alternative B assumes that replacement pier projects be permitted even if the required fill removal occurs outside of the current "geographic vicinity" (for example, a proposed replacement structure could be built on the Northeast Waterfront in association with removal of a pier south of the Bay Bridge). The WLUP notes that such flexibility could increase the incentive to remove dilapidated and condemned piers, such as Pier 64 in China Basin. The contemplated provision is not consistent with present Bay Plan and Special Area Plan policies, but it will be addressed as part of the MOU between the Port and BCDC.

THE STATE LANDS COMMISSION

State Lands Commission review focuses on proposals of non-trust uses. The agency is most intent that non-trust development not foreclose future trust use of the land, and therefore is especially concerned when long-term leases or land exchanges to facilitate non-trust development are proposed. State Lands evaluations of non-trust use proposals are complex and generally must consider factors that cannot be known until there is a specific development proposal. They assess not only the nature of a proposed use, but the lease term, the location, cost and amortization implications, size, and design of the development, and the Port's financial assumptions and benefits analysis at the time. Consequently, it is not possible to identify clear conflicts between the WLUP and the restrictions of the trust at this point. That can only be done when projects are proposed and defined, on a case-by-case basis. However, areas of potential concern for those projects can be generally identified.

All Alternatives

Existing commercial recreation uses on piers and wharves and existing office uses and other non-water-oriented uses in pierhead and bulkhead buildings are assumed to continue under all Alternatives, including the No Project Alternative. The State Lands Commission may become concerned in time about continuing some office, general industrial, or general warehousing uses and commercial recreation uses that it considers non-trust uses. This may occur under any of the Alternatives, depending on how long the uses are continued, the marketability of the sites for rust uses, and the Port's overall financial strength. However, it is more likely to arise under Alternatives A and B -- especially Alternative B -- than under the No Project Alternative, because they assume new revenue-generating development, strengthening Port finances and ncreasing the possibility that State Lands would question the necessity to continue some non-rust uses.

All Alternatives assume that the Port would determine that some lands are surplus to trust needs nd lease the site(s) for housing, non-water-oriented retail, or other non-trust development. The tate Lands Commission would evaluate the necessity for any such proposal and the effects it would have on the trust lands, as well as any land exchange associated with it. Legislative authorization might be required, either on a case-by-case basis, or to give the Port greater autonomy in determining, with the SLC, when lands are legitimately surplus to trust needs.

Alternatives A and B

Alternatives A and B assume some mixed-use commercial recreation developments that would include some non-trust uses, such as general office use, as interim or incidental uses. The State Lands Commission would review mixed-use projects to identify all non-trust uses and assure they are interim uses or incidental uses to primary trust use.

Both Alternatives also assume that some interim non-trust uses would be permitted for periods of up to 10 years, and in some cases on the Southern Waterfront, for 20 to 30 years. Given its concern for protecting trust lands for future trust use, the State Lands Commission might not concur with terms of that length. In administering State lands that remain in State jurisdiction, the Commission has applied a rule of practice limiting interim non-trust uses to terms of 5 years. However, the Commission is considering whether longer interim terms should be allowed, especially in view of the vast amount of trust lands that will become available as a result of pending military base closures. In any case, the State Lands Commission would give very careful scrutiny to a lease of 20 to 30 years in near-shore areas suited for maritime use.

THE PASSENGER SERVICES ACT

The Passenger Services Act of 1886 (46 USC 289) essentially prohibits "foreign flag vessels" (those built, owned, or staffed from outside the United States) from carrying passengers one-way between United States ports. Passengers taken between United States ports on a foreign-flag vessel must embark and disembark at the same port, and a foreign port-of-call must be made. Because almost all of the passenger cruise vessels are foreign-flag, one-way cruises between San Francisco and popular cruise destinations such as Alaska are prohibited. This prohibition places San Francisco at a competitive disadvantage compared to other West Coast ports because of San Francisco's greater distance from Alaska (and other destinations along the U.S. coast) compared to Seattle or Los Angeles, respectively, which requires longer cruises at a time when the industry trend is toward shorter cruises.

Under the No Project Alternative and Alternative A, it is assumed that the Passenger Services Act is not changed, and that San Francisco is not able to improve its position in the cruise market. Under Alternative B, it is assumed that the Passenger Service Act is changed, and that San Francisco would be able to market one-way trips to Alaska and accommodate foreign-flag vessels making multiple stops along the California coast, resulting in more cruise ship activity. The Port Commission has adopted a resolution (No. 96-40, April 23, 1996) supporting efforts to amend the Act to allow foreign vessel operators to transport passengers between U.S. ports where there is no existing American operator of an overnight deep draft or overnight inland waterway passenger vessel, until a comparable American operator enters this market.

NOTES - Public Plans, Policies And Regulatory Agencies: Comparison

[1] Memorandum of understanding comprises "Agreement between the San Francisco Bay Conservation and Development Commission and the Port of San Francisco to review Port plans and policies implementing the San Francisco Waterfront Land Use Plan as well [sic] possible amendments to the San Francisco Bay Plan, Special Area Plan, Total Design Plan, and other documents," Port Resolution No. 96-02, March 25, 1996.

[2] Eagan, Dennis M., Deputy Attorney General, for John K. Van De Kamp, Attorney General, State of California Department of Justice, letter to Alan R. Pendleton, Executive Director, San Francisco Bay Conservation and Development Commission, "Request for Informal Opinion concerning BCDC Jurisdiction Over Piers that Predate the Establishment of BCDC," October 8, 1986.

[3] San Francisco Bay Conservation and Development Commission. San Francisco Bay Plan, Part V, Fills in Accord with Bay Plan, Section 5, January 1969, as amended.

[4] San Francisco Bay Conservation and Development Commission and Metropolitan Transportation Commission. San Francisco Bay Area Seaport Plan, April 18, 1996.

B. LAND USE AND GROWTH-INDUCING IMPACTS

APPROACH TO DETERMINING POTENTIAL LAND USE IMPACTS

The Waterfront Land Use Plan (WLUP) recommends land use policy for all property under Port jurisdiction. The Plan specifies acceptable and unacceptable land uses, both in general and on a site-by-site basis. The Plan also sets forth general and site-specific policies and development standards.

The WLUP provides for flexibility by designating, for many parcels, a wide variety of acceptable land uses. While the Plan proposes very few uses that would not be allowable under existing zoning, other regulatory constraints (especially those administered by the Bay Conservation and Development Commission (BCDC) and the State Lands Commission) are proposed to be amended in order to allow and/or promote development of the acceptable land uses in the Plan, as described in Chapter III, Project Description, pp. 44-46 and Section V.A., Environmental Impacts, Public Plans, Policies and Regulatory Agencies: Comparison, pp. 384-394. If fully implemented, the WLUP proposal would broaden the range of land uses and activities that could occur in the Project Area compared with existing conditions and under existing regulatory constraints.

As one site-specific example of the WLUP's proposed flexibility, Pier 35, currently used for cruise ship terminal, maritime and general office, temporary berthing, parking, and special events, is designated by the Plan to be acceptable for all of these existing uses as well as ferry and excursion boats, water taxis, museums, public access, assembly and entertainment, retail and restaurant, and wholesale trade/promotion uses. This range of acceptable uses is narrower than the range of permitted uses under existing underlying M-1 (Light Industrial) zoning. The non-water-oriented uses (e.g., maritime and general offices) would not be permitted under BCDC replacement fill policies if the Pier needed substantial repairs to accommodate such uses.

The WLUP also calls for considerable flexibility in allowing "interim uses" in the Project Area. Interim uses would not have to be water-oriented and are proposed to be allowed for periods of 5 to 30 years depending on location and other factors. Currently, such uses are generally limited to terms of 5 years or less. As explained in Chapter III, Project Description (pp. 47-48), assumptions underlying Alternative A maximize interim uses.

While the WLUP proposes a variety of acceptable uses, nothing in the Plan would actually cause particular land uses to change or relocate nor new development to occur. The Plan merely provides direction for the Port Commission in its consideration of land use changes as they may be proposed in the future. This factor, when coupled with the Plan's wide variety of acceptable uses as noted in the preceding paragraphs, makes for a high degree of uncertainty as to which land uses might occur on which sites in the future.

In order to provide a framework for this EIR's analysis of potential environmental impacts, alternative future land use scenarios were constructed as EIR Alternatives that bracket a reasonable range of potential future locations, types of activity, levels of activity, and resulting impacts that could occur under the WLUP. None of the Alternatives represents a proposal for waterfront development. The Alternatives are described in Chapter III, Project Description, pp. 58-68. This Land Use and Growth-Inducing Impacts section describes the kinds of land use changes that could occur under the Plan, based on the Alternatives, and land use impacts that could result. This section also will describe, where appropriate, other land use changes that could cause land use impacts but that are not specifically reflected in the Alternatives.

Most, but not all, of the land use changes that could occur under the Alternatives have been quantified, primarily to be able to carry out a transportation analysis. The future land area that may be occupied by certain uses was not able to be meaningfully quantified for land use analysis purposes, particularly open space, public access and uses that take place in the water. It is too speculative to estimate future open space and public access because the amount depends on the ype and form and location of future projects (e.g., changes to piers) and the (unknown) equirements that the Port Commission and BCDC may impose. The description of land use changes in this section therefore is qualitative with respect to these latter uses. The use of quantitative versus qualitative estimates is in no way intended to minimize the importance of any group of uses; clearly, open space/public access and water uses are important current and future waterfront uses. Future land area for parking was also not quantified, as it is speculative to redict its form and amount; a range of potential future parking spaces has been estimated and is iscussed in Section V.D., Environmental Impacts, Transportation, pp. 495-501.

otential land use changes are summarized in tables which accompany this EIR section. hanges are described more fully in the text. Types of changes in land use include reuse of xisting vacant space; conversion of an existing use to another use; construction of new uildings with new uses; and shifting of uses from one location to another, either within or among subareas. The tables provide existing (1995) land use amounts and the net changes that could occur under the Alternatives.

The impact analysis and discussion is at a general level of detail, befitting the general nature of the project, which is a land use/policy plan and not a specific physical development proposal. Potential impacts will generally be analyzed on a subarea-by-subarea basis. An overall potential amount of future development by land use type will be examined, except that important known site-specific and/or major potential land uses identified in the WLUP, such as a cruise terminal or container shipping terminal, will be discussed. Specific future developments that may be proposed pursuant to the WLUP will undergo applicable environmental review to determine more site- and time-specific potential impacts.

The potential impacts of three Alternatives, including the No Project Alternative, Alternative A, and Alternative B, are considered in this section. The WLUP is organized into five subareas: Fisherman's Wharf, Northeast Waterfront, Ferry Building, South Beach/China Basin, Southern Waterfront. These are the units of analysis for the examination of potential impacts from the proposed land uses contained in the WLUP. There are, in each subarea, a number of sites that have been identified by the Waterfront Plan Advisory Board and Port staff as potential mixed use opportunity sites. These are presented by subarea, and the implications and potential impacts of uses, should they occur on these sites in the subarea, are discussed under each Alternative. Potential impacts on areas adjacent to the project area are also described.

The parcels under Port jurisdiction in the Candlestick and Hunter's Point Shipyard area that are separated from the waterfront are not assumed to show any net change in land use under any of the Alternatives and are not discussed further in this section.

Table 23 provides a summary, for the entire Project Area, of net changes in land uses that could occur under each Alternative compared with existing conditions. Table 23 is intended to accompany the General Overview of each Alternative's land use impacts discussed later. Tables 24-26, pp. 400-402, provide the same information for each subarea, and are intended to accompany the subarea-by-subarea description of land use impacts of each Alternative that follows the General Overview discussions.

TABLE 23: EXISTING AND NET CHANGE IN PROJECT AREA BUILDING SPACE AND OPEN LAND AREA, TOTALED, BY USE: 1995-2010 BY ALTERNATIVE/a/

	Building Space and Open Land Area/b/			
Land Use	1995	No Project Alternative	Alternative A	Alternative B
Local Retail	132,000	-7,000	+62,000	0
Regional Retail	0	0	+130,000	+160,000
Visitor and Specialty Retail	559,000	+92,000	+180,000	+275,000
A/E/R/c/	0	+79,000	+309,000	+1,225,000
Trade, Promotion Center	0	0	+200,000	+100,000
Office, R&D	837,000	+16,000	-39,000	+234,000
Warehouse, Light Industry	1,051,000	+210,000	+628,000	-495,000
General Industry	1,674,000	0	+340,000	-684,000
Hotels /e/	0	+88,000	0	+770,000
Housing /f/	310,000	+80,000	+230,000	0
Cargo Shipping	3,525,000	+1,152,000	+1,283,000	+9,207,000
Ship Repair	1,243,000	-592,000	-592,000	0
Fishing Industry	188,000	+142,000	+142,000	+149,000
Cruise	206,000	+55,000	+55,000	+55,000
Ferry, Excursion	153,000	+81,000	+96,000	+125,000
Water Recreation	157,000	+29,000	+31,000	+142,000
Maritime Support	923,000	+16,000	+15,000	+26,000
Historic Ships/d/	64,000	0	0	0
TOTAL SQ. FT. THESE USES	11,022,000	+1,441,000	+3,070,000	+11,289,000
Hotel Rooms	0	+125	0	+1,100
Residential Units	310	+80	+230	0
Vacant Space	15,811,000	-1,551,000	-3,966,000	-12,929,000

/a/ This table does not quantify total building space or open land area in the WLUP Project Area. Parking, open space, and public access are not included. In addition, these tables do not include additional berths, ramps, docks, or certain other "water-area" improvements associated with maritime uses. Numbers do not include potential pier removal or change in water coverage. These uses and changes are addressed qualitatively in the EIR's analysis of impacts.

/b/ In square feet, except for hotel rooms and residential dwelling units. Open land area represents land, exclusive of buildings, used for various types of activities in the Project Area.

/c/ Assembly, Entertainment, and Recreation.

/d/ Additional space for historic ships is not quantified. Under the WLUP, historic ships could occur at one or more of a number of locations within the Plan Area.

/e/ Assumes 700 square feet (sq. ft.) per hotel room.

/f/ Assumes 1,000 sq. ft. per residential unit.

NOTE: Existing building space and open land area devoted to parking totals 1,390,000 square feet; future parking land area was too speculative to quantify because precise future uses are unknown (different uses in the same land use categories used in the WLUP and this EIR analysis have different parking requirements); because it is not possible to determine how much existing parking could be converted to other uses in order to determine net changes; and because it is not possible to predict the extent that parking exceptions under Planning Code Section 161(f) or general parking variances may be applied.

SOURCE: Recht Hausrath & Associates

TABLE 24: NET LAND USE CHANGES - NO PROJECT ALTERNATIVE/a/

	Total Building and Open Land Area by Subarea/b/					
Land Use	Fisherman's Wharf	Northeast Waterfront	Ferry Building	South Beach/ China Basin	Southern Waterfront	Total Project Area
Local Retail	0	-15,000	0	+8,000	0	-7,000
Regional Retail	0	0	0	0	0	0
Visitor & Specialty Retail	0	+10,000	+82,000	0	0	+92,000
A/E/R /c/	+49,000	0	+30,000	0	0	+79,000
Trade, Promotion Center	0	0	0	0	0	0
Office, R&D	0	+72,000	-62,000	+6,000	0	+16,000
Warehouse, Lt. Industry	0	+84,000	-14,000	+140,000	0	+210,000
General Industry	0	0	0	0	0	0
Hotels/d/	0	+88,000	0	0	0	+88,000
Housing/e/	0	+80,000	0	0	0	+80,000
Cargo Shipping	0	0	0	0	+1,152,000	+1,152,000
Ship Repair	0	0	0	-592,000	0	-592,000
Fishing Industry	+244,000	-33,000	0	-69,000	0	+142,000
Cruise	0	+55,000	0	0	0	+55,000
Ferry, Excursion	0	+12,000	+69,000	0	0	+81,000
Water Recreation	0	0	0	+29,000	0	+29,000
Maritime Support	+16,000	0	0	0	0	+16,000
Historic Ships/f/	0	0	0	0	0	0
TOTAL THESE USES	**+309,000**	**+353,000**	**+105,000**	**-478,000**	**+1,152,000**	**+1,441,000**
Hotel Rooms	0	125	0	0	0	125
Residential Units	0	80	0	0	0	80

/a/ This table does not quantify total building space or open land area in the WLUP Project Area. Parking, open space, and public access are not included. In addition, these tables do not include additional berths, ramps, docks, or certain other "water-area" improvements associated with maritime uses. Numbers do not include potential pier removal or change in water coverage. These uses and changes are addressed qualitatively in the EIR's analysis of impacts.

/b/ In square feet, except for hotel rooms and residential dwelling units. Open land area represents land, exclusive of buildings, used for various types of activities in the Project Area.

/c/ Assembly, Entertainment, and Recreation.

/d/ Assumes 700 square feet (sq. ft.) per hotel room.

/e/ Assumes 1,000 sq. ft. per residential unit.

/f/ Additional space for historic ships is not quantified. Under the WLUP, historic ships could occur at one or more of a number of locations within the Plan Area.

SOURCE: Recht Hausrath & Associates

TABLE 25: NET LAND USE CHANGES - ALTERNATIVE A/a/

	Total Building and Open Land Area by Subarea/b/					
Land Use	Fisherman's Wharf	Northeast Waterfront	Ferry Building	South Beach/ China Basin	Southern Waterfront	Total Project Area
Local Retail	+3,000	-20,000	-9,000	+78,000	+10,000	+62,000
Regional Retail	0	+130,000	0	0	0	+130,000
Visitor & Specialty Retail	+55,000	+30,000	+116,000	-21,000	0	+180,000
A/E/R /c/	+99,000	+100,000	+75,000	+35,000	0	+309,000
Trade, Promotion Center	0	+200,000	0	0	0	+200,000
Office, R&D	+10,000	-22,000	-75,000	+48,000	0	-39,000
Warehouse, Lt. Industry	0	-415,000	-14,000	+318,000	+739,000	+628,000
General Industry	0	0	0	-127,000	+467,000	+340,000
Hotels/d/	0	0	0	0	0	0
Housing/e/	0	+110,000	0	+120,000	0	+230,000
Cargo Shipping	0	-369,000	0	0	+1,652,000	+1,283,000
Ship Repair	0	0	0	-592,000	0	-592,000
Fishing Industry	+244,000	-33,000	0	-69,000	0	+142,000
Cruise	0	-206,000	0	+261,000	0	+55,000
Ferry, Excursion	+15,000	0	+81,000	0	0	+96,000
Water Recreation	0	0	0	+31,000	0	+31,000
Maritime Support	+16,000	0	0	-91,000	+90,000	+15,000
Historic Ships/f/	0	0	0	0	0	0
TOTAL THESE USES	**+442,000**	**-495,000**	**+174,000**	**-9,000**	**+2,958,000**	**+3,070,000**
Hotel Rooms	0	0	0	0	0	0
Residential Units	0	110	0	120	0	230

/a/ This table does not quantify total building space or open land area in the WLUP Project Area. Parking, open space, and public access are not included. In addition, these tables do not include additional berths, ramps, docks, or certain other "water-area" improvements associated with maritime uses. Numbers do not include potential pier removal or change in water coverage. These uses and changes are addressed qualitatively in the EIR's analysis of impacts.

/b/ In square feet, except for hotel rooms and residential dwelling units. Open land area represents land, exclusive of buildings, used for various types of activities in the Project Area.

/c/ Assembly, Entertainment, and Recreation.

/d/ Assumes 700 square feet (sq. ft.) per hotel room.

/e/ Assumes 1,000 sq. ft. per residential unit.

/f/ Additional space for historic ships is not quantified. Under the WLUP, historic ships could occur at one or more of a number of locations within the Plan Area.

SOURCE: Recht Hausrath & Associates

TABLE 26: NET LAND USE CHANGES - ALTERNATIVE B/a/

	Total Building and Open Land Area by Subarea/b/					
Land Use	Fisherman's Wharf	Northeast Waterfront	Ferry Building	South Beach/ China Basin	Southern Waterfront	Total Project Area
Local Retail	+3,000	-10,000	-4,000	+9,000	+2,000	0
Regional Retail	0	+25,000	0	0	+135,000	+160,000
Visitor & Specialty Retail	+90,000	+45,000	+111,000	+29,000	0	+275,000
A/E/R /c/	+140,000	+575,000	+160,000	+350,000	0	+1,225,000
Trade, Promotion Center	0	0	0	+100,000	0	+100,000
Office, R&D	-105,000	+53,000	+33,000	+3,000	+250,000	+234,000
Warehouse, Lt. Industry	+8,000	-458,000	-14,000	-153,000	+122,000	-495,000
General Industry	0	0	0	-207,000	-477,000	-684,000
Hotels/d/	+245,000	+140,000	0	+385,000	0	+770,000
Housing/e/	0	0	0	0	0	0
Cargo Shipping	0	-369,000	0	+760,000	+8,816,000	+9,207,000
Ship Repair	0	0	0	0	0	0
Fishing Industry	+251,000	-33,000	0	-69,000	0	+149,000
Cruise	0	+55,000	0	0	0	+55,000
Ferry, Excursion	+15,000	0	+81,000	+29,000	0	+125,000
Water Recreation	0	+82,000	0	+60,000	0	+142,000
Maritime Support	+16,000	-253,000	0	-197,000	+460,000	+26,000
Historic Ships/f/	0	0	0	0	0	0
TOTAL THESE USES	**+663,000**	**-148,000**	**+367,000**	**+1,099,000**	**+9,308,000**	**+11,289,000**
Hotel Rooms	350	200	0	550	0	1,100
Residential Units	0	0	0	0	0	0

/a/ This table does not quantify total building space or open land area in the WLUP Project Area. Parking, open space, and public access are not included. In addition, these tables do not include additional berths, ramps, docks, or certain other "water-area" improvements associated with maritime uses. Numbers do not include potential pier removal or change in water coverage. These uses and changes are addressed qualitatively in the EIR's analysis of impacts.

/b/ In square feet, except for hotel rooms and residential dwelling units. Open land area represents land, exclusive of buildings, used for various types of activities in the Project Area.

/c/ Assembly, Entertainment, and Recreation.

/d/ Assumes 700 square feet (sq. ft.) per hotel room.

/e/ Assumes 1,000 sq. ft. per residential unit.

/f/ Additional space for historic ships is not quantified. Under the WLUP, historic ships could occur at one or more of a number of locations within the Plan Area.

SOURCE: Recht Hausrath & Associates

LAND USE IMPACTS - ALL ALTERNATIVES

General Overview

Under all Alternatives, many land uses would remain, and most projects that are approved, under construction, or under review are assumed to be in place by the analysis year of 2010. Increases n the amount of building space and open land area in active use in the Project Area would occur under all Alternatives, though the amount, mix of uses, and ways the changes would occur (e.g., reuse of vacant space, conversion of existing space from one use to another, new construction, etc.) would vary among the Alternatives and subareas, as described later in this section.

Given the variety of uses permitted in a variety of locations by the WLUP, it is possible that specific uses that may be proposed in the future pursuant to the Plan may cause land use conflicts, either within or adjacent to the Project Area. Examples include maritime industrial or heavy maritime uses near water contact recreation locations, or industrial uses near residences. Such conflicts could constitute substantial impacts. The potential for specific land use conflicts would need to be examined at the time new uses may be proposed in the future. Virtually all projects large enough or in a sensitive enough location to have a potentially significant land use conflict would undergo project-specific environmental review at such future time. That environmental review would ensure identification and consideration of alternatives or mitigation measures to reduce or eliminate potential impacts as part of the project review process.

Bay Fill

Some Bay fill could be expected under all Alternatives. Bay fill could be "new fill," that is, a new pier, berth, filled land area, or other Bay cover in a new location, or "replacement fill," that s, replacement or "substantial repair"[1] of existing piers that extend their useful life.

Development and activity pursuant to the WLUP could require new fill to service water-dependent uses. Pursuant to the McAteer-Petris Act, BCDC approval would be needed for all uch Bay fill proposals. (See Section IV.A., Environmental Setting, Public Plans, Policies and Regulatory Agencies, especially pp. 95-100, for discussion of how new fill and replacement fill re regulated). Although difficult to predict, a study of the cumulative new fill potentially equired throughout the Project Area based on the land uses and activities assumed for the various Alternatives yielded an estimate of about four acres of new fill for the No Project Alternative and Alternative A, and about 13 acres of new fill for Alternative B. This fill would be proposed for water-dependent uses, in compliance with the McAteer-Petris Act, including such uses as ferry terminals, cargo ship berths, boat launches, and recreational boat berths. New fill would probably total two acres or less for each subarea under any of the Alternatives except that the expanded cargo shipping scenario under Alternative B could require about eight acres of fill in the Southern Waterfront subarea at Pier 94-96 to create a new container ship berth. The Bay fill estimated to be needed under each Alternative would not necessarily constitute a net addition, depending on BCDC and Port action. In the past, approval of new fill has been tied to removal of surplus existing fill. The estimate of new fill that could be placed in the 15-year EIR analysis period may be compared to changes in Project Area fill in the 15 years between 1976 and 1991. In that period, about 36 acres of fill were removed from the Bay and about six acres of new fill were added, resulting in a net removal of 30 acres of Bay fill in the Project Area.

New fill which may be needed to serve water-dependent uses is distinguished from replacement fill. Replacement fill includes replacement of piers or substantial repairs to piers that extend the useful life of the pier. Uses envisioned by the WLUP that would be new to a pier and that would involve an increase in public use or occupancy may require substantial repairs or pier replacement, and thus may constitute replacement fill. Under the replacement fill policy contained in the San Francisco Bay Plan, the area of the Bay covered by replacement fill must be less than that which is uncovered by the project. In addition, development of any Bay-oriented commercial recreation and public assembly uses is limited to 50 percent of the area uncovered, with the remaining 50 percent devoted to public recreation and open space/public access or open water. Consequently, the amount of replacement fill created in new pier developments (which meet Bay Plan use criteria) can vary substantially, depending on whether developers choose to provide open space/public access or open water area.[2]

Each Alternative would involve at least some replacement fill. The replacement fill estimates are expressed in ranges which reflect differences due to whether open space/public access areas are provided on rebuilt piers or returned to open water. The amount of existing facility area that could constitute replacement fill has been estimated to be about 5 to 7 acres under the No Project Alternative, about 42 to 65 acres under Alternative A, and about 77 to 97 acres under Alternative B. These estimates were made according to the conservative assumption that any pier put to a new permanent use per the WLUP would require replacement fill; to the extent that improvements to existing pier structures do not constitute "substantial repairs," the estimates are overstated. It is not possible to predict the net loss in fill area that would occur due to the requirement that replacement fill projects yield a lesser fill area than the original, because the amounts would be determined on a case-by-case basis by the Port Commission and BCDC.

Public Open Space and Public Access

It is probable that new public open space and public access areas would be created under all the Alternatives, beyond those currently planned as shown in Table 6, in Section IV.B., Environmental Setting, Land Use, p. 117. In addition, new development projects would provide public open space/access areas to comply with the Waterfront Land Use Plan, the San Francisco Bay Plan, and the McAteer-Petris Act. Also, for projects determined by BCDC to require replacement fill, existing BCDC placement fill policies (as assumed in Alternative A) require at east 50 percent of the rebuilt area must be used for open space purposes (Alternative B assumes hat 20 percent of the replacement area would be used for open space).

t is not possible to meaningfully quantify the amount nor to describe the types of public open space/access areas for a number of reasons. First, specific development proposals are not known at this time, so that it is not possible to determine the potential for various locations, sizes and ypes of public open space/access areas. Second, while BCDC is responsible for ensuring that "maximum feasible public access" is provided in all projects requiring a BCDC permit, there are no specific standards defining how that requirement is to be satisfied, particularly for projects in BCDC jurisdiction which do not involve replacement fill. Determinations are made on a case-by-case basis after analysis of the opportunities presented by a specific development proposal. Third, while BCDC's replacement fill policy is quantified, the 50 percent open space requirement may be satisfied either by providing public open space/access on the replacement fill area, or by eaving an equivalent area open to the Bay. Therefore, if, for example, a number of piers totaling 50 acres are replaced, new open space created due to the existing replacement fill policy could ange from zero to 25 acres. Under Alternative B's 20 percent assumption, the same example could produce public access/open space areas ranging from zero to 10 acres. Furthermore, as noted above under "Bay Fill," replacement fill estimates may be overstated, which could distort esultant public open space/access area estimates. Taken together, these factors make estimates of future public open space/access area too speculative to be meaningful or reliable.

Fisherman's Wharf Subarea

Consistent with WLUP objectives and the recently completed improvements at Pier 45, all Alternatives assume a restoration and intensification of the former fish handling and processing uses. The proposed Hyde Street Harbor project (addition of 60 to 115 berths, Harbor Services building, and other supporting uses) is assumed for all Alternatives (but the use of the berths varies by Alternative). The Underwater World aquarium, which opened in the spring of 1996, is reflected as an assembly and entertainment/recreation use in all Alternatives but was not included in 1995 figures. Planned public access improvements at Piers 43 and 47 could occur under all Alternatives. Key existing land uses that would remain under all Alternatives include the two swimming and rowing club docks at Aquatic Park and the Hyde Street Pier, the excursion boat operations at Pier 41½, major public access areas, and the mixed use specialty retail complex at Pier 39.

Northeast Waterfront Subarea

It is assumed that fishing industry uses would be relocated from this subarea and consolidated in the Fisherman's Wharf subarea under all Alternatives. Key existing land uses that would remain under all Alternatives include the office development on seawall lots, restaurants on seawall lots and piers, the excursion boat operations at Pier 31½, the bar pilots at the end of Pier 9, and the public access and fishing Pier 7 and other existing public access areas.

Ferry Building Subarea

The ferry terminal project at Piers ½ and 2 would occur under all Alternatives. Renovation of the Ferry Building would occur under all Alternatives, but the mix of uses would vary by Alternative. A new breakwater and access pier would be constructed as part of the Ferry Terminal improvements. Rincon Park, planned for the seawall lots across from the Promenade and a portion of The Embarcadero roadway, would exist under all Alternatives. Key existing uses that would remain under all Alternatives include the existing ferry service, Ferry Plaza open space, the Promenade between the Agriculture Building and Pier 22½, restaurants, and some of the existing office and retail uses.

South Beach/China Basin Subarea

It is assumed that fishing industry uses would be relocated from this subarea and consolidated in the Fisherman's Wharf subarea under all Alternatives. Phase One of South Beach Park would be developed on Seawall Lot 334. The boat launch at Pier 52 would be improved and supporting retail uses would be developed. Key existing land uses that would remain under all Alternatives include the fireboats at Pier 22½, the Delancey Street and Steamboat Point residential complexes and supporting uses, South Beach Harbor and public access areas and pier, the houseboats and public park along China Basin Channel, boat clubs and maritime support uses at Pier 54, small boat repair and lay berthing at Pier 54½, the retail/restaurant uses at Mission Rock Resort, other retail and restaurant uses, Agua Vista Park at Pier 64½, and other existing major public access/open space areas.

Southern Waterfront Subarea

The planned project to restore the wetlands and create public access at Pier 98 would occur under all Alternatives. Key existing land uses that would remain under all Alternatives include ship repair at Piers 68-70, the container cargo operations at the Pier 94-96 terminal (although the utilization is assumed to vary by Alternative), and public access areas along Islais Creek and at Warm Water Cove.

LAND USE IMPACTS - NO PROJECT ALTERNATIVE

General Overview

This Alternative assumes continuation of present trends and no comprehensive land use plan for the Project Area. Under the No Project Alternative, land use changes would be relatively small and incremental over the 15-year study period; refer to Table 23, p. 399. The total amount of space in active use in the Project Area would show a net increase of about 1.4 million square feet (excluding hotel and residential uses), or about 12 percent. Most of the increase would occur due to open land area reactivation for cargo shipping in the Southern Waterfront subarea. The net amount of building space in use would increase by about 470,000 sq. ft, or 11 percent. Overall, other than the relatively substantial increase in land devoted to cargo shipping, modest net increases in warehouse/light industrial and fishing industry uses would occur, with lesser increases in visitor/specialty retail and assembly/entertainment/recreation uses. The area devoted to ship repair uses would be consolidated in the Southern Waterfront subarea and show a decrease of almost 600,000 sq. ft. Nonetheless, water-dependent uses would comprise over two-thirds the net increase in building and open area in active use in 2010. The overall proportion of water-dependent and non-water-dependent uses would remain virtually the same. Under this Alternative, about 125 new hotel rooms and 80 new housing units could be located in the Project Area, in the Northeast Waterfront subarea, which could add about 168,000 sq. ft. of space in buildings. Most non-water-dependent development would occur on seawall lots as new construction replacing existing low intensity uses such as gas stations and parking. Other development would consist of interim use of existing buildings for low-intensity activities such as storage and warehousing. Refer to Table 24, p. 400, for net changes in land uses by subarea under the No Project Alternative.

An increase in the area devoted to public access/open space could be expected, limited to not much more than planned parks and other such areas, as outlined by subarea in Section IV.B., Environmental Setting, Land Use and Zoning, pp. 120-161. The increase would be due to Bay Conservation and Development Commission requirements for public access and would be a continuation of recent trends in which open spaces have been created when opportunities are available. About four acres of new fill could be needed for water-dependent uses, and another 5 to 7 acres of replacement fill (pier structures that have been replaced, or substantially repaired) could be required to support new water-dependent, Bay-oriented commercial recreation, public assembly, or public open space uses. New fill would be concentrated in the Fisherman's Wharf and Ferry Building subareas, primarily for the Hyde Street Harbor and Ferry Terminal projects. Replacement fill would result in a net reduction in Bay coverage which cannot be quantitatively estimated, as explained earlier on p. 403.

New uses that are required to supply off-street parking under the City Planning Code would generally be expected to provide that parking; some existing land currently used for parking could be developed for other uses. It is not known to which specific sites or uses additions or subtractions of parking may apply, nor is it known how and in what locations parking would be configured in the future; therefore it is not possible to quantify potential net changes in land used for parking or discuss in detail potential land use impacts associated with parking. Refer to the Section V.D., Environmental Impacts, Transportation, "Parking Impacts," pp. 495-501, for further discussion regarding parking issues as they relate to transportation impacts.

Fisherman's Wharf Subarea

Under the No Project Alternative, Fisherman's Wharf subarea land use changes between 1995-2010 would be limited to projects currently under construction, approved, or proposed (refer to Table 24, p. 400). About 309,000 sq. ft. of new uses would result, mostly water-dependent -- related to the fishing industry and maritime support. These changes reflect earthquake repair and improvements to Pier 45 (now completed) and relocation of displaced fishing industry uses back there, and proposed improvements and expansion to Hyde Street Harbor berths and other facilities. The remaining 49,000 square feet of new uses would be assembly/entertainment/

recreation consisting of the Underwater World aquarium at Pier 39, which opened in the spring of 1996. Other expected changes in this subarea are new and/or improved public access at various locations and changes in parking (such as accessory on Pier 45 and possible loss of certain areas used temporarily for open parking). In all, there would be about a 27 percent increase in space devoted to active land uses, and the proportion of water-dependent uses would increase from about one-fifth to one-third.

An environmental impact report is in preparation for the proposed additional berths for Hyde Street Harbor and Pier 45, Sheds A and C Improvements. In Sheds A and C, a Fisheries Center is proposed. Due to the damage caused by the 1989 Loma Prieta earthquake, there have only been limited uses in any of the four pier sheds; Sheds B and D re-opened for fish processing in late 1995.

Land use changes under the No Project Alternative would be consistent with the existing land use pattern in the Fisherman's Wharf subarea. Most new uses would occur in existing buildings. Expansion of fishing industry uses would occur in locations historically used for such purposes and new assembly/entertainment/recreation uses would occur adjacent to existing similar/compatible uses. No substantial disruption or division of the physical arrangement of the established uses would occur, nor would the changes substantially alter the existing character of the area. Therefore, no significant land use impacts would occur under this Alternative in this subarea.

Northeast Waterfront Subarea

Under the No Project Alternative, a total net increase in space in active use of about 353,000 quare feet would occur in the Northeast Waterfront subarea, including 168,000 square feet in 25 hotel rooms and 80 dwelling units that could be developed on seawall lots, about 84,000 quare feet of warehouse/light industrial space, and 72,000 sq. ft. of office space. Some of these ses would replace open land now used for parking. Water-dependent use changes would nclude 55,000 additional sq. ft. of cruise ship uses representing expansion of the existing cruise hip terminal, 12,000 sq. ft. of excursion boat/ferry uses, and the loss of 33,000 sq. ft. of fishing ndustry uses (representing relocation back to Fisherman's Wharf of uses dislocated to Pier 33 by oma Prieta earthquake damage to Pier 45). Overall space in active use would increase by ughly 15 percent. Most of the increase would occur in non-water-dependent uses; the oportion of water-dependent uses in the subarea would drop slightly. Most existing uses ould remain unchanged.

Land use changes under the No Project Alternative would generally be consistent with the existing land use pattern in the Northeast Waterfront subarea. A hotel and housing would be new uses for seawall lots in this area, but would not be a substantial change in land use character of the landside area nor create any obvious land use conflicts with existing landside uses, which include offices, restaurants, parking and a gas station. Many hotels are located adjacent to the Project Area in Fisherman's Wharf; considerable residential development is located adjacent to the Project Area in the Telegraph Landing and Golden Gateway areas, both of which are nearby this subarea. Taken together, the relatively modest land use changes under the No Project Alternative would not cause substantial disruption or division of the physical arrangement of established uses, nor would the changes substantially alter the existing character of the area. Therefore, no significant land use impacts would occur under this Alternative in this subarea.

Ferry Building Subarea

Under the No Project Alternative, land use changes in the Ferry Building subarea would mostly be limited to those associated with approved or proposed projects: rehabilitation of the Ferry Building to incorporate an option of possible meeting facilities, retail, entertainment, and conference uses as well as office space; construction of a public plaza in front of the Ferry Building as part of the mid-Embarcadero Roadway and open space projects; ferry terminals and public open space/public access at Pier ½ and Pier 2; and Rincon Park and a restaurant on Seawall Lots 327 and 348 at the foot of Folsom Street along the Embarcadero Promenade. Overall, 62,000 net sq. ft. of office and 14,000 net sq. ft. of warehouse space would be removed, and 32,000 sq. ft. of visitor/specialty retail, 69,000 sq. ft. of excursion ferry, and 30,000 sq. ft. of assembly/ entertainment/recreation space would be added. The net amount of space in active use in the subarea would increase by about 21 percent; most of the increase would be open land area devoted to excursion ferry service uses.

Land use changes under the No Project Alternative would be consistent with the existing land use pattern in the Ferry Building subarea. Expansion of excursion ferry uses would occur in locations historically used for ferry operations. New uses in the assembly/entertainment/recreation category would bring people to the subarea and would not pose obvious conflicts with the existing mix of office, restaurant, retail, ferry, and parking uses. The proportion of water-dependent uses would approximately double, to about 18 percent. No substantial disruption or division of the physical arrangement of the established uses would occur, nor would the changes substantially alter the existing character of the area. Therefore, no significant land use impacts would occur under this Alternative in this subarea.

South Beach/China Basin Subarea

Under this Alternative, relatively little change would occur. The large amount of existing vacant space would increase, as ship repair activity would consolidate in the Southern Waterfront subarea and vacate this subarea, involving 592,000 sq. ft. of building space and open land area. Fishing industry uses now located in different places in the subarea would relocate back to Pier 45 at Fisherman's Wharf. About 140,000 sq. ft. of interim warehouse space would be added, along with modest amounts of water recreation, local retail, and offices. Overall, about 183,000 sq. ft. of new uses would be added and 661,000 sq. ft. of space now in use would be vacated, yielding a net increase of 478,000 sq. ft. of vacant/underutilized space, or about 18 percent of existing space in use. With the loss of water-dependent uses, the proportion of non-water-dependent uses would increase from 52 percent to 70 percent.

Existing land use character in the subarea would not change under this Alternative, except that inactive/vacant land and building space would increase; numerous piers would be or remain vacant. Addition of some warehouse uses would be consistent with existing such uses located in this subarea. Loss of the ship repair industry in this subarea could have social and economic effects but would not constitute a significant land use impact.

Southern Waterfront Subarea

Under this Alternative, land use change assumptions would be limited to reactivation of cargo shipping uses at Piers 80 and 94/96, comprising about 1.2 million sq. ft., mostly open land area. This would constitute about a 20 percent increase in the subarea's space in active use compared to existing conditions. Space in water-dependent use would rise from the current 69 percent to 74 percent of space in active use. The change would represent a partial return to former cargo shipping activity levels in the same locations and would not cause significant land use impacts.

LAND USE IMPACTS - ALTERNATIVE A

General Overview

In general, Alternative A would entail a moderate amount of land use changes compared with existing conditions and the No Project Alternative. Many of the assumed changes under the No Project Alternative, particularly those related to projects under construction, approved or proposed would also occur under Alternative A. Some shifting of certain water-dependent uses from the Northeast Waterfront subarea to the South Beach/China Basin and Southern Waterfront subareas would occur. As with the No Project Alternative, ship repair uses in the South Beach/China Basin subarea are assumed to vacate and consolidate in the Southern Waterfront subarea. Under Alternative A, considerable amounts of land underutilized for maritime and other uses would be developed on an interim, but fairly long-term, basis for warehousing and industry. Limited live/work uses could also occur, in the South Beach/China Basin and Southern Waterfront subareas. Moderate increases in retail and assembly/entertainment/recreation uses would occur in all subareas save the Southern Waterfront, totaling 300,000 to 400,000 sq. ft. each for retail and A/E/R. Space for wholesale trade/promotion center, regional retail, and assembly/ entertainment/recreation would be added in the Northeast Waterfront subarea as adaptive reuse of space vacated by maritime uses. Open land now used for parking would tend to be developed for other uses in all subareas except the Southern Waterfront. A total of 230 residential units could be built. Cargo shipping in the Southern Waterfront subarea would increase. Small boat berthing, ferries and excursion facilities would increase in the other subareas. Alternative A illustrates a scenario of somewhat more new construction on seawall lots and interim uses of existing facilities than the No Project Alternative, as well as some instances of more intensive waterfront activity.

About four acres of new fill could be needed for water-dependent uses. Similar to the No Project Alternative, new fill would be concentrated in the Fisherman's Wharf (for the proposed Hyde Street Harbor project) and Ferry Building (for the proposed Ferry Terminal improvements) subareas. About 42 to 65 acres of replacement fill (pier structures that have been replaced or substantially repaired) could be required, to support new water-dependent, Bay-oriented commercial recreation, Bay-oriented public assembly, or public open space uses. Replacement fill could result in a net reduction in Bay coverage which cannot be quantitatively estimated, as explained on p. 403. Replacement fill would likely be concentrated in the Northeast Waterfront and South Beach/China Basin subareas, which together could account for over 80 percent of the total, with most of the remainder in the Ferry Building subarea.

he total amount of space in active use in the Project Area would show a net increase of about .1 million sq. ft., or about 25 percent compared with existing conditions, and somewhat over vice as much as the No Project Alternative. Most of the net increase would occur in the outhern Waterfront subarea. Both water-dependent and non-water-dependent uses would ncrease, and non-water-dependent uses would comprise about two-thirds of the net increase in uilding and open area in active use in 2010. Water-dependent uses would comprise about 8 percent of land in active use under Alternative A, compared with 52 percent now (excluding arking and public access/open space uses). Refer to Table 25, p. 401 for net changes in land ses by subarea under Alternative A. Although not possible to quantify, public access/open pace area would likely show modest increases under Alternative A, because some new uses ould be required to dedicate such areas under proposed Plan policies and/or BCDC equirements, and because modest revenues from the anticipated uses could be available to upport maintenance of such areas. New uses that are required to supply off-street parking under e City Planning Code would generally be expected to provide that parking; some existing land urrently used for parking could be developed for other uses. It is not known to which specific tes or uses additions or subtractions of parking may apply; therefore it is not possible to uantify potential net changes in land used for parking. Refer to Section V.D., Environmental npacts, Transportation, "Parking Impacts," pp. 495-501, for further discussion regarding arking issues.

isherman's Wharf Subarea

his subarea would gain about 442,000 sq. ft. of space in active use, over one-half due to re-stablishment of fishing industry uses on Pier 45, as described under the No Project Alternative. bout 100,000 sq. ft. of assembly/entertainment/recreation uses would be added, of which one-lf would be due to the Underwater World aquarium, which opened in the spring of 1996. bout 55,000 sq. ft. of visitor and specialty retail would also be added. The sembly/entertainment/recreation and retail uses assume completion of the proposed Seafood enter/Hyde Street Harbor project as well as consolidation of fishing industry uses on Pier 45, d that area's resulting attractiveness to visitors would support new waterfront retail/restaurant es. Additional excursion ferry service mounting to about 15,000 sq. ft. is also assumed under lternative A. Relocation or reconfiguration of parking (e.g., moving parking off SWL 300/301 'The Triangle") is possible. While not quantified, residential uses could occur on Seawall Lots 1, 312, and/or 313. The overall amount of space in active use would increase in the subarea by about 38 percent, mostly in existing buildings and open area facilities but some in new building space.

The types of uses that would increase under Alternative A would be consistent with existing uses and activities in the Fisherman's Wharf subarea. The proportion of water-dependent uses would increase from about 20 percent to 30 percent. As discussed under the No Project Alternative, fishing industry uses have historically been located in the area. The increase in visitor and specialty retail uses would be about 15 percent over the existing amounts of such uses within the subarea, and considerably less over the amounts of similar uses in the greater Fisherman's Wharf area. Assembly/entertainment/recreation uses are consistent with the high activity levels and visitor population in the subarea. Overall, the land use changes would constitute a modest increase in overall land use intensity in the subarea but would not be out of character with the existing area and its uses nor cause substantial disruption or divisions within the area.

Northeast Waterfront Subarea

This subarea would experience some notable changes under Alternative A. The cruise terminal at Pier 35 would be relocated to the South Beach/China Basin subarea, all existing cargo shipping uses would relocate to the Southern Waterfront, most existing warehouse uses would disappear or relocate elsewhere, and fishing industry uses would relocate back to Fisherman's Wharf. Adaptive reuse of some of the vacated facilities would add about 140,000 net sq. ft. of retail space, much of it possible regional retail such as a public market; 200,000 sq. ft. of wholesale trade/promotion space; assembly/entertainment/recreation uses such as events promotion; residential development on some of the seawall lots amounting to about 110 dwelling units and 110,000 sq. ft. of building space; and parking. An overall net loss of about 495,000 sq. ft. in active use (not counting parking) would occur, representing about a 20 percent shrinkage of space in active use in the subarea, due to BCDC regulatory constraints limiting the amount of commercial/recreation uses on piers.

The regional retail use of a public market could represent a shift of location and expansion of the existing Saturday Ferry Plaza farmer's market. The market could also move to the Fisherman's Wharf area or remain in the Ferry Building subarea, depending on site availability, market analysis, project economics, and design feasibility.

Jnder Alternative A the land use character of the Northeast Waterfront subarea would change. Vhile 267,000 square feet of maritime support uses would remain, cargo shipping and cruise erths would relocate to other subareas. The area in water-dependent use would shrink from early one-half to about one-fifth of the space in active use in the subarea. This shrinkage would ot be compensated by growth in non-water-dependent uses, which are assumed to increase by nly about 8 percent (though the mix of uses would be different, as described above). The shift f industrial maritime uses away from this area would represent a continuation of long-term ends. The uses shown to replace some of the relocated industrial maritime space are a mixture f public/visitor-serving uses (e.g., public market, events promotion) and private services (e.g., holesale trade). The increase in public/visitor serving uses would increase activity levels in the ıbarea and extend some of these kinds of uses between the Fisherman's Wharf and Ferry uilding areas, where they already exist. Section V.D., Environmental Impacts, Transportation . 446), examines the potential traffic and parking impacts that could result. Residential uses at would develop on seawall lots under this Alternative would be similar to those existing ljacent to the Project Area in the Golden Gateway development and the foot of Telegraph Hill.

ıe kinds of land uses that would result under Alternative A are similar to, or compatible with, ose that exist in various locations along and near the waterfront. While the character of the ortheast Waterfront subarea would change, no substantial disruption or division of land use tterns would occur, nor would the changes constitute significant adverse changes in the land e character. To the extent that the voters have expressed a policy of reserving the waterfront water-dependent uses where possible, the loss of water-dependent uses in this area could be nsidered by some people to be an adverse change. However, uses lost here would shift to ıer, generally more suitable locations along the waterfront and thus no overall loss of water-pendent use would occur. Furthermore, the WLUP would not cause such a change, which uld be attributable primarily to market and local conditions (e.g., the reconstruction of a high-lume surface Embarcadero roadway and transit median which hinders truck maneuverability l access to piers) and would be a continuation of long-standing trends.

ry Building Subarea

ernative A would bring relatively modest changes to this subarea beyond those assumed under No Project Alternative (completion of the Ferry Building project for retail, entertainment, ce, and assembly uses, completion of new ferry terminals, etc.): mostly some additional retail ce and possible outdoor recreation space. A net reduction of about 75,000 sq. ft. of existing office space and 14,000 sq. ft. of existing warehouse space would occur. A small amount of local retail space would be lost but about 116,000 sq. ft. of visitor/ specialty retail space would be added, along with 75,000 sq. ft. of assembly/ entertainment/ recreation uses and 81,000 sq. ft. devoted to excursion ferry use. Overall, about 174,000 net sq. ft. of space in active use would be added, increasing the existing amount of such space in the subarea by about 35 percent. Almost one-half of the new space would be open area for excursion ferry and recreational uses.

The land use changes would bring an increase in activity levels to the area, with expanded ferry patronage and an increasingly activated Ferry Building providing support for retail and recreation uses. Similar to the No Project Alternative, land use changes under Alternative A would be consistent with the existing land use pattern in the Ferry Building subarea. Reactivation and intensification of uses in the Ferry Building would not be inappropriate for the building, with its highly prominent location and easy multimodal access. Expansion of excursion ferry uses would occur in locations historically used for ferry operations. New assembly/entertainment/recreation uses would not pose obvious conflicts with the existing mix of office, restaurant, retail, ferry, and parking uses. The proportion of water-dependent uses would more than double, from 8 percent to 18 percent. No substantial disruption or division of the physical arrangement of the established uses would occur, nor would the changes substantially alter the existing character of the area. Therefore, no significant land use impacts would occur under this Alternative in this subarea.

South Beach/China Basin Subarea

Under Alternative A, this subarea would show little net change in overall space in active use, but notable changes in the mix of uses would occur. As with the No Project Alternative, all ship repair activities (592,000 square feet) would disappear and fishing industry uses (69,000 sq. ft.) would relocate to the Fisherman's Wharf subarea. A loss of about 91,000 sq. ft. of maritime support facilities would occur. Some existing general industrial uses on open land would also leave the subarea. Interim warehouse/storage and light industrial uses (possibly including some live-work space) totaling about 318,000 net new sq. ft. would locate in the subarea, along with additional local-serving retail, office, water recreation, and assembly/entertainment/recreation uses. This Alternative assumes relocation and some expansion of cruise berthing and support facilities from Pier 35 to this area, at Pier 30-32. About 120 residential units are assumed to be developed, adding about 120,000 sq. ft. of building space in the South Beach portion of the subarea.

nder Alternative A, water-dependent uses in the subarea would decrease from about 48 percent about 31 percent of space in active use (excluding parking and public access/open space uses). hile open land area in use would decline by about 557,000 sq. ft., uses in buildings would crease by about 548,000 sq. ft. Overall, vacant land would increase and some piers would main or become vacant, though fewer piers would be vacant than under the No Project lternative. Thus, the character of the subarea would shift away from water-dependent uses hough substantial amounts of water-dependent uses would remain) toward more non-water-ependent uses, and the area would become more built up at the same time that large vacant nd/or underutilized areas would exist.

epending on the location of new industrial/warehouse and residential uses, land use conflicts ould occur. Residential uses are generally not compatible with industrial uses due to noise, ust, heavy traffic, and other nuisances. Whether new impact-generating uses located in oximity to existing residential uses, or new residential uses located in proximity to existing or ture impact-generating uses, compatibility issues could arise. If the new residential uses were locate close to existing residential areas, and new industrial/warehouse uses were to locate in isting industrial areas, such conflicts would be minimized. Both new industrial/warehouse es and new residential uses that may be proposed (with the exception of very small projects) ould be subject to environmental review at such future time, which would ensure identification any potential conflicts and consideration of alternatives or mitigations to reduce potential pacts.

her than potential residential/industrial incompatibilities, most land uses that would result der Alternative A are similar to, or compatible with, those that exist in various locations along d near the waterfront. No substantial disruption or division of land use patterns would occur, r would the changes constitute significant adverse changes in the land use character. To the tent that the voters have expressed a policy of reserving the waterfront for water-dependent s where possible, the loss of ship repair and other water-dependent uses in this area could be nsidered by people to be an adverse change. However, no overall loss of water-dependent use uld occur in the Project Area as a whole because cargo shipping would increase in the uthern Waterfront subarea and maritime support facilities in the China Basin/South Beach area would shift to the Southern Waterfront. Furthermore, the WLUP would not cause such a nge, which would be a continuation of long-standing trends. Loss of the ship repair industry his subarea could have social and economic effects but would not constitute a significant land impact.

Southern Waterfront Subarea

Under Alternative A, this subarea would experience an increase of about 1.65 million sq. ft. devoted to cargo shipping and about 1.2 million sq. ft. of warehousing and general industry uses. All of the general industry and most of the cargo shipping increases would occur in open land area, while the warehouse/light industry increases would occur in buildings. An increase of about 90,000 sq. ft. in maritime support uses and about 10,000 sq. ft. in local retail uses would also occur. Overall space in active use would increase by just over 50 percent compared to the existing amount. Both water-dependent and non-water-dependent uses would increase substantially over existing amounts. The proportion of space in water-dependent use would drop slightly from the existing 69 percent to 66 percent.

The increase in cargo shipping uses would represent a partial return to former cargo shipping activity levels in the same locations and would not cause significant land use impacts. The increase in warehouse/light industrial space would represent a shift from competing locations elsewhere in the industrially zoned lands in southeast San Francisco. The entire area including the waterfront is zoned for such uses and their location in the Project Area would not cause general land use disruption or substantial alteration of existing land use character.

Alternative A includes specific consideration of a cogeneration power plant facility proposed for a portion of Seawall Lot 344. A power plant use is deemed an acceptable use for this site by the WLUP provided certain development standards are met, including state-of-the-art environmental protection and facility design, maximum public benefits, and no precluding of nearby maritime activities. Cogeneration plant siting approval is under the jurisdiction of the California Energy Commission pursuant to Chapter 6 of the Warren-Alquist Act, commencing with Public Resources Code Section 25500. Environmental review of the proposal has been carried out, with information contained in the functional equivalent of an environmental impact report pursuant to CEQA Section 21080.5 and CEQA Guidelines Section 15251(k). The project is controversial in the Bayview/Hunters Point community, with some residents supporting the project and others extremely concerned about its potential environmental and health impacts. Should the Port Commission consider leasing the site for the project, it would rely on the California Energy Commission's environmental assessment, the Final Staff Assessment, which included land use, socio-economic, visual resources, transportation, odor, environmental justice, air quality, public health, biology, cultural resources, hazardous materials, hazardous wastes, soil and water resources, and community benefits assessments.

LAND USE IMPACTS - ALTERNATIVE B

General Overview

Alternative B is a maximum reasonable development scenario through year 2010 that would involve the largest amount of land use changes compared with existing conditions and the other Alternatives. Unlike the other Alternatives, under Alternative B most of the sites identified in the WLUP as "mixed-use opportunity areas" would be fully developed, generally with non-water-dependent uses on the landside seawall lots coordinated with water-oriented uses on piers. A high level of cargo shipping and other industrial maritime uses is assumed, involving reactivation of large pier and backland areas in the Southern Waterfront and, to a lesser extent, South Beach/China Basin subareas. Some shifting of industrial maritime uses from the Northeast Waterfront to the South Beach/China Basin and Southern Waterfront subareas would occur. Under Alternative B, considerable amounts of space now utilized for warehouse and general industrial uses would be converted to water-dependent uses or redeveloped for other uses such as assembly/entertainment/recreation. This Alternative also would maximize reasonable development of hotels through 2010, adding about 1,100 rooms and about 770,000 sq. ft. of building space. A notable increase in retail and assembly/entertainment/recreation uses would occur throughout the Project Area, new A/E/R uses totaling 1.2 million sq. ft. Considerable open area now used for parking would be redeveloped for new uses, though many of the new uses would provide accessory parking.

Alternative B illustrates a scenario of substantially more intensive waterfront activity than existing conditions or the other Alternatives. It is assumed that under Alternative B, waterside development could involve reconstruction and strengthening of piers, and/or reconfiguration of existing piers. This Alternative would also likely involve the most new Bay fill, possibly up to 13 acres. Over one-half of the potential new fill -- about eight acres -- would be required for an additional container ship berth at Pier 94N. As under the No Project Alternative and Alternative A, about one and one-half to two acres of new fill would be located in the Fisherman's Wharf (for the proposed Hyde Street Harbor project) and Ferry Building (for the proposed Ferry Terminal improvements) subareas. In addition, about one and one-half acres of new fill would be needed in the Northeast Waterfront subarea as berth space to serve assumed sailing center and cruise terminal uses. Relatively minor amounts of new fill (less than 5,000 sq. ft.) could be needed to serve water-dependent uses in the South Beach/China Basin subarea. About 77 to 97 acres of replacement fill (pier structures that have been replaced or substantially repaired) could be required, to support new water-dependent, Bay-oriented commercial recreation, Bay-oriented public assembly, or public open space uses. Replacement fill could result in a net reduction in Bay coverage which cannot be quantitatively estimated, as explained on p. 403. Replacement fill would likely be concentrated in the Northeast Waterfront and South Beach/China Basin subareas, which together could account for over 85 percent of the total, with most of the remainder in the Ferry Building subarea.

The total amount of space in active use in the Project Area would show a net increase of about 11.3 million square feet or almost double the existing amount. Most of the net increase (over 80 percent) would occur in the Southern Waterfront subarea. Both water-dependent and non-water-dependent uses would increase; water-dependent uses would comprise about 86 percent of the net increase in building and open area in active use in 2010. Water-dependent uses would comprise about 68 percent of land in active use under Alternative B, compared with 52 percent now (excluding parking and public access/open space uses). Refer to Table 26, p. 402 for net changes in land uses by subarea under Alternative B. Although not possible to quantify, public access/open space area would likely show notable increases under Alternative B, because many of the relatively large number of new uses would be required to dedicate such areas under proposed Plan policies and/or BCDC requirements, and because revenues from the anticipated uses could be available to support maintenance of such areas. New uses that are required to supply off-street parking under the City Planning Code would generally be expected to provide that parking; some existing land currently used for parking could be developed for other uses. It is not known to which specific sites or uses additions or subtractions of parking may apply; therefore it is not possible to quantify potential net changes in land used for parking. Because of the magnitude of new development assumed under Alternative B, it may be assumed that more parking is provided than currently exists, particularly parking accessory to specific uses. The configuration, distribution, and precise location of changes in parking are not possible to predict. Refer to Section V.D., Environmental Impacts, Transportation, pp. 495-501, for further discussion regarding parking issues.

Fisherman's Wharf Subarea

This subarea would gain about 663,000 sq. ft. of net space in active use. About 251,000 sq. ft. of fishing industry uses would be added due to their re-establishment on Pier 45, as described under the No Project Alternative. About 140,000 sq. ft. of assembly/entertainment/recreation uses would be added, of which about one-third would be due to the Underwater World aquarium which opened in the spring of 1996. About 350 hotel rooms would be built on one or more seawall lots, which could add about 245,000 sq. ft. of building space. About 90,000 sq. ft. of visitor and specialty retail would also be added. The assembly/entertainment/recreation and retail uses assume completion of the proposed Seafood Center/Hyde Street Harbor project as well as consolidation of fishing industry uses on Pier 45, and that area's resulting attractiveness to visitors would support new waterfront retail/restaurant uses to a greater extent than under the other Alternatives. Under this Alternative, about 105,000 square feet of existing office space would be replaced by other uses. Additional excursion ferry service amounting to about 15,000 sq. ft. is also assumed under Alternative B. As with Alternative A, relocation or reconfiguration of areas used for parking could occur. The overall amount of space in active use in the subarea would increase by about 58 percent.

The types of uses that would increase under Alternative B would be consistent with existing uses and activities in the Fisherman's Wharf subarea. The proportion of land area devoted to water-dependent uses would increase from about 19 percent to 28 percent. As discussed under the No Project Alternative, fishing industry uses have historically been located in the area. The increase in visitor and specialty retail uses would be about 27 percent over existing amounts within the Project Area and considerably less in the context of similar uses in the greater Fisherman's Wharf area. Some of the increase that would occur in the Project Area under this Alternative would have occurred in nearby Fisherman's Wharf locations. Assembly/entertainment/recreation uses are consistent with the high activity levels and visitor population in the subarea. Overall, the land use changes would constitute a modest increase in overall land use intensity in the subarea but would not be out of character with the existing area and its uses nor cause substantial disruption or divisions within the area.

Northeast Waterfront Subarea

Under Alternative B the amount of space in active use would decline by about 148,000 sq. ft.; space in buildings would increase (169,000 sq. ft.) while open land uses would decrease by about 317,000 sq. ft. The dominant changes to the subarea would be the loss of most industrial uses: ll cargo shipping (369,000 sq. ft. relocated south of China Basin), most (253,000 sq. ft. elocated south of China Basin) maritime support uses, and most (458,000 sq. ft.) warehouse/light industrial uses, and the addition of 575,000 sq. ft. of assembly/entertainment/ ecreation uses and 200 hotel rooms. The City's cruise ship terminal would remain in the ubarea, though not necessarily in the same location, and expand by 55,000 sq. ft. Water ecreation uses would increase by 82,000 sq. ft. Regional and visitor/specialty retail would increase by 70,000 sq. ft. Office space would increase by about 53,000 sq. ft. Though not quantifiable, public access and open space area would increase, provided in conjunction with the new development.

Under Alternative B the land use character of the Northeast Waterfront subarea would change. While about 100,000 sq. ft. of maritime support uses would remain, cargo shipping and other industrial maritime uses would mostly be relocated south of China Basin. The area in water-dependent use would shrink from about 40 percent to about one-fifth of the space in active use in the subarea. Non-water-dependent uses would grow by about one-quarter. The shift of industrial maritime uses away from this area would represent a continuation of long-term trends. The uses shown to replace some of the lost industrial maritime space would draw visitors and residents to attractions such as events promotion facilities that would utilize the large buildings located on many of the piers in the subarea. The increase in public/visitor-serving uses such as retail and hotels would also increase activity levels in the subarea and extend some of these kinds of uses between the Fisherman's Wharf and Ferry Building subareas. Water uses and activities, such as water taxis and recreational boating, would increase. Section V.D., Environmental Impacts, Transportation (p. 446), examines the specific potential traffic and parking impacts of such shifts. In general, the substantial increases in activity levels associated with this Alternative would increase congestion, noise, and daytime and evening population in and near the Project Area. To the extent the general activity level and associated effects spill over into nearby areas, people living and working nearby would notice and potentially be inconvenienced. Traffic and parking impacts could be particularly noticeable; mitigation measures suggested in Section VI.D., Mitigation Measures, Transportation (p. 644) would help reduce impacts. The level of activity and associated effects would be similar to other mixed use high density areas in the City such as Embarcadero Center area.

The kinds of land uses that would result under Alternative B are not obviously or substantially incompatible with those that exist and would remain in the area. While the character of the Northeast Waterfront subarea would change, no substantial disruption or division of land use patterns would occur, nor would the changes constitute significant adverse changes in the land use character. To the extent that the voters have expressed a policy of reserving the waterfront for water-dependent uses where possible, the loss of industrial water-dependent uses in this area could be considered by people to be an adverse change. However, uses lost here would shift to other, generally more suitable locations along the waterfront and substantial increases in both industrial and non-industrial maritime uses would occur in the Project Area as a whole.

Furthermore, the WLUP would not cause such a change, which would be attributable primarily to market and local conditions (for example, the reconstruction of a high-volume surface Embarcadero roadway and transit median which hinders truck maneuverability and access to piers) and would be a continuation of long-standing trends.

Ferry Building Subarea

Alternative B would increase total net space in active use by about 367,000 sq. ft., an increase of almost 75 percent over the existing amount. Compared with Alternative A, more space would be added for assembly/entertainment/recreation and office uses. Other uses would be similar to those that would occur under Alternative A: addition of about 111,000 sq. ft. of visitor/specialty retail space and 81,000 sq. ft. devoted to excursion ferry use.

The land use changes would bring a substantial increase in activity levels to the area, with expanded ferry patronage and an increasingly activated Ferry Building providing support for retail and recreation uses, and A/E/R uses such as a possible convention facility. Land use changes under Alternative B would be consistent with the existing land use pattern in the Ferry Building subarea. Convention facilities would be new to the area but would not pose obvious conflicts with the existing uses in the area such as offices, hotels, and retail/restaurants, especially given the excellent transit access. Reactivation and intensification of uses in the Ferry Building would not be inappropriate for the building, with its highly prominent location and easy multimodal access. Expansion of excursion ferry uses would occur in locations historically used for ferry operations. New assembly/entertainment/recreation uses would not pose obvious conflicts with the existing mix of office, restaurant, retail, ferry, and parking uses. The proportion of water-dependent uses would increase from 8 percent to 14 percent. No substantial disruption or division of the physical arrangement of the established uses would occur, nor would the changes substantially alter the existing character of the area. Therefore, no significant land use impacts would occur under this Alternative in this subarea.

South Beach/China Basin Subarea

Under Alternative B, this subarea would undergo notable changes. About 760,000 square feet of cargo shipping area would be added as piers and supporting backlands south of China Basin Channel reactivate as marine terminals. As with the other Alternatives, fishing industry uses (69,000 sq. ft.) would relocate to the Fisherman's Wharf subarea. A loss of about 197,000 sq. ft. of maritime support facilities would occur. About 360,000 sq. ft. of general industrial and warehouse/storage and light industrial uses would leave the subarea, under the assumption that this space (plus existing vacant space) would be needed to accommodate the high level of cargo shipping as well as Mission Bay buildout assumed for this Alternative.[3] Excursion ferry (29,000 sq. ft.) and water recreation (60,000 sq. ft.) space would be added. Mostly north of China Basin Channel, non-water-dependent uses would predominate in the South Beach area. About 350,000 sq. ft. of assembly/ entertainment/recreation and 100,000 square feet of wholesale trade/promotion center activities would be added. About 550 hotel rooms would be constructed in about 385,000 sq. ft. of buildings. Overall, an increase of about 1.1 million sq. ft. of space in active use would occur, 41 percent more than the existing amount.

Under Alternative B, water-dependent uses in the subarea would increase slightly from about 48 percent to about 50 percent of space in active use (excluding public access/open space uses). Almost two-thirds of the net increase in space would be in buildings. Vacant land would decrease and existing vacant piers would generally be activated and rebuilt where necessary. The existing trend away from industrial water-dependent uses in the South Beach area, north of China Basin Channel, would continue, while south of the Channel such water-dependent uses would be re-established. Unlike the other Alternatives, Alternative B assumes ship repair uses would remain in current amounts in the subarea. The concentration and expansion of industrial maritime uses in the China Basin area would generally be compatible with existing land uses and area character, but would not be compatible with future uses of residential and open space wetlands planned for nearby areas east of Third Street under the Mission Bay Plan. Industrial noise and lights, truck traffic, and nighttime operations could hinder successful future residential development and enjoyment of future open space.

Similar to the Northeast Waterfront subarea, considerable assembly/entertainment/recreation development would occur in the South Beach area under Alternative B. These uses would substantially increase activity levels in the subarea by attracting residents and visitors. Section V.D., Environmental Impacts, Transportation (p. 446) examines the specific potential traffic and parking impacts of such increases. In general, congestion, noise, and daytime and evening population in and near the Project Area would increase. To the extent the general activity level and associated effects spill over into nearby areas, people living and working nearby would notice and potentially be inconvenienced. Traffic and parking impacts could be particularly noticeable; suggested mitigation measures in Section VI.D., Mitigation Measures, Transportation (pp. 644-647) would help reduce impacts. The level of activity and associated effects would generally be similar to other mixed use high density areas in the City such as Embarcadero Center area.

Southern Waterfront Subarea

Under Alternative B, this subarea would experience an increase of about 8,816,000 sq. ft. devoted to cargo shipping and 460,000 sq. ft. of maritime support uses. About 250,000 sq. ft. of office or research/development uses could be added (such as perhaps an office or educational "campus" at the historic Union Iron Works complex at Pier 70), as well as 122,000 sq. ft. of warehouse/light industrial uses. A regional retail use of about 135,000 sq. ft., such as warehouse retail, is also assumed to be developed. A reduction of about 477,000 sq. ft. of general industrial uses would occur, mostly open land area that would be converted to cargo shipping and maritime support uses. Almost 80 percent of the total increase in active space of 9.3 million sq. ft. would be open land area that is now vacant or unused. Overall space in active use would nearly triple compared to the existing amount. The proportion of space in water-dependent use would increase from the existing 69 percent to 88 percent.

The increase in cargo shipping uses would represent a return to former cargo shipping activity and maritime support use levels in the same locations and would not cause significant land use impacts. Office or research uses might not find the heavy truck traffic, noise, dust, and general increase in industrial maritime activity to be compatible, depending on location. Similarly, a regional retail use could experience access and compatibility problems due to heavy truck traffic, noise, and dust. Office and regional retail could potentially co-exist without substantial conflicts with a lesser level of cargo shipping than Alternative B assumes. Planned wetlands open space at Pier 98 would also experience noise and other incompatible effects from proximity to heavy industrial and shipping activity.

Spillover truck traffic, noise, and dust could be noticeable and could affect residents living in the northern portions of the South Bayshore (Bayview-Hunters Point) district and in pockets of dwellings on the east side of Potrero Hill, east of I-280. South Bayshore residential areas lie south of Evans Avenue, which is south of the southernmost working pier (Pier 96-98) and its truck routes, and so would not be greatly affected.

GROWTH-INDUCING IMPACTS

The following discussion of growth-inducing impacts that could result from the WLUP is based on material prepared by Recht Hausrath & Associates, Urban Economists. The source material, slightly edited, is included as Appendix J of this EIR. The subsection "Implications for Total Employment and Job Opportunities in San Francisco" in Section V.C., Environmental Impacts, Population, Housing and Employment (pp. 435-438), contains certain information relative to growth inducement, particularly regarding employment growth.

Growth-Inducing Impacts - No Project Alternative

The land use changes under the No Project Alternative would be consistent with overall local and regional land use assumptions implicit in the Association of Bay Area Governments (ABAG) *Projections '94*, which describes the overall economic/employment growth scenario for San Francisco and the region between 1995 and 2010. No growth inducement would occur.

Growth-Inducing Impacts - Alternative A

New uses under Alternative A would represent a shift of some retail, hotel, wholesale trade/promotion, assembly/entertainment/recreation, and light industry uses from other San Francisco locations. That is, growth of most of these uses in the Project Area would likely occur at the expense of their location elsewhere in San Francisco, particularly with respect to most retail, warehouse, and industrial uses. For example, warehousing and industrial uses locating on the waterfront would otherwise likely have located in other industrially zoned areas in the City, rather than representing an overall increase in these uses in the City. There is no reason to believe that the availability of space and its promotion by the Port for such uses would increase the demand for them Citywide. As another example, wholesale trade/promotion center uses potentially could locate in the Civic Center, Showplace Square, and certain other South of Market or North Potrero sites. Successfully attracting these uses to the waterfront would shift development that would have occurred in these other areas. Certain uses, however, such as assembly/entertainment/recreation and certain specialty retail uses, could locate due to the unique nature of the San Francisco waterfront setting. Their location on the waterfront could come at the expense of locating similar uses elsewhere in the City, and/or could also represent a net addition to future City or regional uses that would not have occurred elsewhere. However, whether representing mere locational shifts in future City land use, or additions to future land use

Citywide or regionwide, the total change in use in the Project Area is quite small compared with Citywide or regionwide amounts of these land uses.

Growth-Inducing Impacts - Alternative B

New uses under Alternative B would represent shifts from other locations in San Francisco as described for Alternative A, plus an increase over forecast growth for the Project Area in the water-dependent uses of cargo shipping and passenger cruises and the non-water-dependent category of assembly/entertainment/recreation uses. In the category of use shifts, growth of some uses in the Project Area, particularly retail, would likely occur at the expense of their location elsewhere in San Francisco, such as Fisherman's Wharf areas outside of the Project Area or Union Square/Yerba Buena Center. Successfully attracting these uses to the waterfront would shift development that would have occurred in these other areas. Alternative B assumes that the San Francisco waterfront, as a place of special qualities of regional, national, and international stature, will attract certain uses that would not otherwise locate in San Francisco or, possibly, the region. In this category would be assembly/entertainment/recreation uses such as museums, urban entertainment complexes including retail, entertainment, sports, high-tech, and/or themed attractions; expanded cruise terminal and related facilities such as supporting retail and hotel development; visitor and specialty retail uses such as restaurants, bars, nightclubs, and theme retail catering to day visitors and tourists as well as San Francisco residents. The location of these uses on the waterfront could come at the expense of locating similar uses elsewhere in the City, and/or could also represent a net addition to future City or regional uses that would not have occurred elsewhere. However, whether representing mere locational shifts in future City land use, or additions to future land use Citywide or regionwide, the total change in use in the Project Area is quite small compared with Citywide or regionwide amounts of these land uses.

Alternative B assumes that San Francisco's share of West Coast cargo demand would increase, unlike the No Project and Alternative A scenarios, which assume continuation of recent historical trends that indicate cargo shipping decreases in importance as part of the City's economic base. The higher levels of cargo shipping activity would support increases in public and private sector activities involved in trade and cargo shipping businesses, and would support some additional business activity in the downtown office sector. The increase could indirectly contribute to cumulative regional traffic and air quality effects by increasing development activity, employment, and resulting trips and traffic. However, the increase would be small relative to existing and projected San Francisco and regional employment and employment-generated traffic.

Alternative B also assumes that cruise vessel calls in San Francisco will increase substantially based on assumed regulatory changes (federal law that currently prohibits foreign flag vessels -- virtually the entire passenger cruise fleet -- from carrying passengers one-way between U.S. ports, and State law restricting gambling on cruise vessels). More cruise activity would represent a net addition of economic activity in San Francisco beyond that expected in the underlying economic scenario, and would indirectly support related activity in the retail, hotel, amusement/entertainment, recreation, transportation, and other passenger and cruise line activities and services. This activity would stimulate more development activity. Under Alternative B, some of this activity would occur in the Project Area as reflected in estimated increases in retail, hotel, and assembly/entertainment/recreation development. Alternative B assumes buildout of many of the WLUP's "mixed-use opportunity areas," which envision coordinated, mutually supportive water-oriented commercial and recreational uses or water-dependent uses (depending on location) on piers, and hotel, parking and other non-water-dependent uses on seawall lots. Some of this activity (beyond the demand captured within the Project Area) would also occur nearby the Project Area and elsewhere in San Francisco.

The increases in activity and uses along the waterfront under Alternative A and, especially, Alternative B, could cause spillover effects in adjacent areas. Spillover effects would be the result of increased visitors and employees in the Project Area and their demands for goods and services. The effects could include any or all of the following: additional development could be stimulated in areas adjacent to high Project Area activity locations; increases in sales or occupancies at existing establishments could occur; existing vacant space could be occupied; and/or existing low-intensity uses could convert to higher-intensity uses. Indirect effects of the spillover effects could include displacement of existing uses (due to higher rents in response to increased demand for various types of space) and increased traffic congestion and resulting air quality and noise effects. These effects would tend to be localized. Overall, the effects would be minor in the context of existing and projected uses and activity levels in San Francisco as a whole, as indicated by the relatively small direct estimated increases in employment and space in various uses over the 15-year WLUP time horizon for analysis.

Alternative B shows the largest increase in office uses expected in the Project Area. The amount (about 235,000 square feet) is too small to make a substantial difference in the San Francisco office market. Alternative B also shows the largest assumed amount of hotel construction, 1100 rooms in several hotels in the Project Area. The number of rooms would be less than 4 percent of the current hotel room inventory in the City (about 30,000 rooms). To the extent this amount of hotel development did not represent a net addition to overnight visitor activity, it could be absorbed by relatively small declines in otherwise expected occupancy rates in other San Francisco hotels.

NOTES - Land Use and Growth Inducing Impacts

[1] There are no clear BCDC criteria as to what constitutes "substantial repair," which is the trigger for applying the replacement fill policy. As described in Section V.A., Public Plans, Policies and Regulatory Agencies: Comparison, p. 384, the Port and BCDC have entered into a memorandum of understanding to reconcile a number of policy and regulatory issues to achieve consistency, where possible, between BCDC regulations and the WLUP. The MOU includes the task of defining the types of improvements that constitute substantial repair, as opposed to other types of maintenance or repair that would not be subject to the replacement fill policy.

[2] The replacement fill policy is described in full in Part V of the Bay Plan under "Control of Filling and Dredging in the Bay, 1a(5) Fills in Accord with Bay Plan." It should also be noted that water-dependent uses (i.e., maritime uses such as ferries, cruise ships, recreational boating, cargo shipping, fishing activities) are also allowed on replacement fill, but are not subject to 50% maximum coverage limitation. Instead, fill for water-dependent uses may be replaced on a one-for-one basis.

[3] The Mission Bay Development Agreement expired at the end of 1995 and Catellus has indicated it will not renew (i.e., terminate) the Agreement. The Mission Bay Special Area Plan, Planning Code, and Zoning Map provisions remain in effect. At this time the effects of terminating the Development Agreement are not known with respect to the overall Mission Bay program and related agreements (e.g., wetlands development, land exchange with the Port, buildout south of China Basin Channel, etc.). Nevertheless, for purposes of providing a conservative impacts analysis, it has been assumed that buildout of the Mission Bay area according to the Mission Bay Specific Plan occurs.

C. POPULATION, HOUSING, AND EMPLOYMENT

PROJECT AREA POPULATION AND HOUSING

Table 27 presents the estimates of Project Area housing and population for each Alternative. Existing housing would remain in the Project Area (in the South Beach/China Basin subarea) under all of the Alternatives. By the year 2010, there would be 80 additional housing units and 140 additional residents in the Project Area under the No Project Alternative and 230 additional units housing 460 additional residents in the Project Area under Alternative A. There would be no additional housing development or residential population in the Project Area between 1995 and 2010 under Alternative B.

In both the No Project Alternative and Alternative A, there would be new housing development and residential population in the Northeast Waterfront subarea of the Project Area. In Alternative A, there would also be new housing development and additional residential population in the South Beach/China Basin subarea.

Live-work development is not shown as a residential use in the Project Area land use tables, and residents of those projects are not counted in the Project Area population estimates for the Alternatives. Live-work development is counted as warehouse/light industrial use, consistent with its treatment in the City's Land Use and Zoning Code. As such, the space is associated with jobs, not with population. Some of the warehouse/light industrial space and employment under Alternative A represents live-work development. Such projects would be located in the South Beach/China Basin and Southern Waterfront subareas.

Housing and population in the Project Area would remain a very small percent of total housing and population in San Francisco. The share would increase somewhat under Alternative A and remain about the same under the No Project Alternative and Alternative B (see Table 28).

PROJECT AREA EMPLOYMENT AND JOB OPPORTUNITIES

All Alternatives

Table 29, p. 432, presents the 1995 to 2010 Project Area employment scenarios for each of the Alternatives. The table shows total employment and the detailed estimates of jobs by land use category. The table also shows the percent distribution of total jobs by land use category, the

TABLE 27: PROJECT AREA HOUSEHOLDS AND POPULATION: 1995 AND 2010 BY ALTERNATIVE

		2010			Net Additional 1995 - 2010		
	1995	No Project Alternative	Alternative A	Alternative B	No Project Alternative	Alternative A	Alternative B
Housing Units	310	390	540	310	+80	+230	0
Households	290	370	520	290	+80	+230	0
Household Population	600	740	1,060	600	+140	+460	0
Employed Residents	350	440	630	350	+90	+280	0

SOURCE: Recht Hausrath & Associates

TABLE 28: PROJECT AREA POPULATION COMPARED TO SAN FRANCISCO TOTALS, 1995, 2010 AND 1995 - 2010

	Project Area	San Francisco/a/	Project Area as a Percent of Total City
1995	600	768,300	0.08%
2010		819,000	
No Project Alternative	740		0.09%
Alternative A	1,060		0.13%
Alternative B	600		0.07%
1995 - 2010		+ 50,700	
No Project Alternative	+ 140		0.28%
Alternative A	+ 460		0.91%
Alternative B	0		0%

NOTE: Some of the increase in housing units and population in the Project Area under Alternative A might represent a net addition of housing and population in San Francisco during this time period and thus an increase in the overall growth scenario for the City. The differences would be very small and they are not quantified as a different Citywide scenario for this EIR. The differences are identified and discussed qualitatively in the text.

/a/ Association of Bay Area Governments, *Projections '94.*

SOURCE: Recht Hausrath & Associates

TABLE 29: PROJECT AREA JOBS BY USE , 1995 AND 2010 BY ALTERNATIVE

	NUMBERS OF JOBS							PERCENTS									
	1995	No Project Alternative		Alternative A		Alternative B		Percent of Total Jobs				Percent Change 1995 - 2010/a/			Percent of Total Change		
Land Use	1995	2010	Change 1995 - 2010	2010	Change 1995 - 2010	2010	Change 1995 - 2010	1995	No Project - 2010	Alternative A - 2010	Alternative B - 2010	No Project	Alternative A	Alternative B	No Project	Alternative A	Alternative B
Non-Water-Dependent Subtotal	*5,040*	*6,460*	*1,420*	*7,440*	*2,400*	*9,780*	*4,740*	*70%*	*74%*	*76%*	*70%*	*28%*	*48%*	*94%*	*89%*	*94%*	*69%*
Retail	1,970	2,110	140	2,890	920	3,060	1,090	27%	24%	30%	22%	7%	47%	55%	9%	36%	16%
Hotel	0	130	130	0	0	1,100	1,100	0%	1%	0%	8%	100%	0%	100%	8%	0%	16%
A/E/R /b/	0	100	100	370	370	1,500	1,500	0%	1%	4%	11%	100%	100%	100%	6%	14%	22%
Trade, Promotion Center	0	0	0	260	260	130	130	0%	0%	3%	1%	0%	100%	100%	0%	10%	2%
Office, R&D	2,100	2,990	890	2,730	630	3,460	1,360	29%	34%	28%	25%	42%	30%	65%	56%	25%	20%
Warehouse, Lt. Industry	800	960	160	1,000	200	430	-370	11%	11%	10%	3%	20%	25%	-46%	10%	8%	-5%
General Industry	170	170	0	190	20	100	-70	2%	2%	2%	1%	0%	12%	-41%	0%	1%	-1%
Water-Dependent Subtotal	*2,150*	*2,320*	*170*	*2,310*	*160*	*4,260*	*2,110*	*30%*	*26%*	*24%*	*30%*	*8%*	*7%*	*98%*	*11%*	*6%*	*31%*
Cargo Shipping	210	250	40	240	30	1,910	1,700	3%	3%	2%	14%	19%	14%	810%	3%	1%	25%
Ship Repair	500	350	-150	350	-150	500	0	7%	4%	4%	4%	-30%	-30%	0%	-9%	-6%	0%
Fishing Industry	350	350	0	350	0	350	0	5%	4%	4%	2%	0%	0%	0%	0%	0%	0%
Cruise	10	10	0	10	0	30	20	0%	0%	0%	0%	0%	0%	200%	0%	0%	0%
Ferry, Excursion	230	480	250	480	250	480	250	3%	5%	5%	3%	109%	109%	109%	16%	10%	4%
Water Recreation	130	150	20	150	20	250	120	2%	2%	2%	2%	15%	15%	92%	1%	1%	2%
Maritime Support	700	710	10	710	10	720	20	10%	8%	7%	5%	1%	1%	3%	1%	0%	0%
Historic Ships	20	20	0	20	0	20	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
TOTAL	7,190	8,780	1,590	9,750	2,560	14,040	6,850	100%	100%	100%	100%	22%	36%	95%	100%	100%	100%

/a/ Changes for Hotel, A/E/R, and Trade, Promotion Center are shown as 100% because there are no jobs associated with those land uses in 1995.

/b/ Assembly, Entertainment, Recreation.

Note: Some numbers do not add due to rounding.

SOURCE: Recht Hausrath & Associates

percent change in jobs by land use category between 1995 and 2010, and the percent of the total change represented by the change in employment in each land use category.

Employment and job opportunities would increase in the Project Area under all Alternatives. Under the No Project Alternative, employment in the Project Area would grow at about the same rate as employment in the rest of San Francisco is expected to grow. With an increase of about 1,600 jobs in the Project Area from 1995 through 2010 under the No Project Alternative, the Project Area would maintain its 1995 share of total San Francisco employment: about 1.3 percent. Under Alternative A, there would be more job growth in the Project Area: an increase of about 2,600 jobs. The Project Area would capture a somewhat larger share of San Francisco economic activity over time; by 2010, the share of total City employment located in the Project Area would increase to 1.5 percent from 1.3 percent. The increase in Project Area employment would be greatest under Alternative B. Employment in the Project Area would almost double, to about 14,000 jobs or 2.1 percent of total employment in San Francisco. (Refer to Table 30 for the comparison of Project Area employment to San Francisco employment totals.)

Job opportunities in water-dependent activities would increase in all of the Alternatives, but only in the future under Alternative B would they represent the same share of total Project Area job opportunities as they do in 1995. Under Alternative A and the No Project Alternative, job opportunities in water-dependent activities would decline over time as a share of total jobs in the Project Area. In those Alternatives, the only substantial increases in water-dependent job opportunities would be in ferry/excursion activities. Those Alternatives illustrate scenarios in which the opportunities in other water-dependent activities remain about the same (the fishing industry, cargo shipping, maritime support) or decline over time (ship repair). By contrast, Alternative B illustrates a scenario in which San Francisco achieves full utilization of its cargo shipping facilities and that activity generates about 1,700 additional jobs in the Project Area, the largest single component (25 percent) of the total increase in Project Area job opportunities under that Alternative.

No Project Alternative

Office jobs in the Ferry Building and Northeast Waterfront subareas would represent the largest components of the increase in jobs in the Project Area under the No Project Alternative. Those jobs would account for more than one-half of the total increase in Project Area job opportunities.

TABLE 30: PROJECT AREA EMPLOYMENT COMPARED TO SAN FRANCISCO EMPLOYMENT, 1995, 2010, AND 1995 - 2010

	Project Area	San Francisco/a/	Project Area as Percent of San Francisco Total
1995	7,190	552,359	1.3%
2010		655,722	
No Project Alternative	8,780		1.3%
Alternative A	9,750		1.5%
Alternative B	14,040		2.1%
1995 - 2010		+ 103,363	
No Project Alternative	+ 1,590		1.5%
Alternative A	+ 2,560		2.5%
Alternative B	+ 6,850		6.6%

NOTE: Some of the increase in employment in the Project Area under Alternative B might represent a net addition of employment in San Francisco during this time period and thus an increase in the overall growth scenario for the City. The differences would be very small and they are not quantified as a different Citywide scenario for this EIR. The differences are identified and discussed qualitatively in the text.

/a/ Association of Bay Area Governments, *Projections '94.*

SOURCE: Recht Hausrath & Associates

The No Project Alternative shows modest increases in job opportunities in retail and visitor-oriented activities, as well as in warehousing and light industry, reflecting recent trends in development in San Francisco and in the use of Port property. Also, following the historic trend, job opportunities in general industry and most water-dependent activities would remain static or decline under the No Project Alternative.

Alternative A

Under Alternative A, the largest component of the increase in jobs in the Project Area would be retail and assembly/entertainment/recreation jobs. This reflects the emphasis of the development scenario for this Alternative on residential development (some of which is assumed to occur on sites that would be developed with offices under the No Project Alternative) and population-serving uses. Together, retail and assembly/entertainment/recreation activities account for 50 percent of the total increase in jobs under Alternative A. Under Alternative A, the Project Area also accommodates a small increase in wholesale trade/promotion and warehouse/distribution or light industry jobs.

Alternative B

As mentioned above, Alternative B illustrates a development scenario under the Waterfront Land Use Plan (WLUP) that brings a substantial increase in jobs to the Project Area. Alternative B also illustrates a scenario in which the mix of types of job opportunities in the Project Area remains relatively diverse. There would be nine times as many cargo-shipping-related job opportunities in the Project Area in 2010 under Alternative B as there are in 1995 or as there would be under either the No Project Alternative or Alternative A. Assembly/entertainment/recreation, retail, and hotel activities would each add more than 1,000 jobs in the Project Area. Growth in office and retail employment would maintain the contribution of those activities to the mix of Project Area jobs. Hotel and assembly/entertainment/recreation activities would become important new components of the overall mix of Project Area job opportunities. There would be a decline in warehouse and general industry jobs in the Project Area.

IMPLICATIONS FOR TOTAL EMPLOYMENT AND JOB OPPORTUNITIES IN SAN FRANCISCO

All Alternatives

Table 30, p. 434, shows Project Area employment in 1995 and 2010 and 1995 - 2010 employment growth in the context of total San Francisco employment and expected employment growth. The increase in job opportunities in San Francisco represented by the employment estimates for each Alternative do not, for the most part, represent job opportunities that are dependent on development in the Project Area or on the WLUP itself. Particularly for non-water-dependent economic activities, the employment scenarios for the WLUP EIR Alternatives represent variations on the amount of San Francisco economic activity and employment that would be captured by development in the Project Area between 1995 and 2010. In other words, the overall level of employment in office, retail, entertainment, hotel, and light industry and repair activities in San Francisco is expected to be about the same for all WLUP EIR Alternatives. If the jobs were not located in the Project Area, they would be elsewhere in San

Francisco; the Financial District, Mission Bay, Showplace Square, South Bayshore, South of Market, Union Square/Yerba Buena, and the Northeast Waterfront and Fisherman's Wharf outside of the Project Area are the several different districts that also could accommodate much of the increase in economic activity and employment that might occur in the Project Area.

Water-dependent activities do depend on the waterfront location, and the differences among the EIR scenarios for those activities do not represent potential shifts from another location in San Francisco. The different employment scenarios for those activities in the WLUP EIR Alternatives primarily depend on market and regulatory factors independent of the WLUP. Therefore, except as indicated in the discussion below, the differences in employment and job opportunities in San Francisco cannot be solely attributed to either the WLUP itself or to alternative development patterns under the Plan.

No Project Alternative

The employment scenario for the No Project Alternative most closely depicts generally accepted expectations for economic activity and jobs in the Project Area. These are the expectations without a WLUP, and they are the expectations implicit in the Association of Bay Area Government's *Projections '94* scenario for population and employment growth in San Francisco and the rest of the Bay Area region through 2010. The land use policy and development potential factors and general market context for economic growth in San Francisco considered by ABAG in the preparation of the regional forecasts are closest to the assumptions behind the No Project Alternative.

The differences from this scenario for the Project Area that could be considered net additional job opportunities in San Francisco are described below for each Alternative.

Alternative A

The scenario for water-dependent activities is essentially the same for Alternative A as it is for the No Project Alternative. Compared to the No Project Alternative, Alternative A would have more Project Area job opportunities in retail, hotel, assembly/entertainment/recreation, wholesale trade/promotion, and light industry, but these would all represent shifts of employment and economic activity from other San Francisco locations. The larger amount of residential development under Alternative A would represent a net addition of that type of economic activity in San Francisco. (See p. 439 for more discussion of housing market implications.)

Alternative B

The Alternative B employment scenario for the Project Area incorporates the potential for net additional jobs in San Francisco, along the waterfront. This could occur in three sectors: cargo shipping, passenger cruising, and assembly/entertainment/recreation. The net additional jobs associated with cargo shipping and passenger cruise activity depend for the most part on market and regulatory factors and are not a direct consequence of the WLUP, although there is some relationship. The Port's ability to provide the necessary facilities and to offer attractive rates to shippers depends on the overall financial strength of the Port. Revenue-generating development on Port property surplus to maritime needs, as would be allowed under the WLUP, would be required to provide and maintain the infrastructure necessary to expand cargo-shipping activity. Similarly, the relationship between higher levels of passenger cruise activity and the WLUP is not direct. Nevertheless, the Port's ability to capitalize on that market segment could be enhanced by the development potential for other Port property enabled by the WLUP and associated regulatory changes.

The Alternative B scenario assumes San Francisco's share of West Coast cargo demand would increase over time and that, by 2010, the Port's cargo shipping facilities would be fully utilized.[1] Under those assumptions, job opportunities in cargo shipping activities in San Francisco would increase to about 1,900 full-time-equivalent jobs from less than about 200 in 1995 and under the base case scenario illustrated in the other Alternatives.[2] Those 1,700 additional jobs associated with the Alternative B full-utilization cargo shipping scenario would be net additional job opportunities in San Francisco, over and above the base case.

If there were changes in Federal and State regulations that currently limit the attractiveness of San Francisco as a passenger cruise destination, San Francisco could tap into the growing pleasure cruise market, and the number of vessels and passengers calling at the Port could ncrease. Alternative B illustrates such a scenario; some of the higher number of job opportunities in the Project Area under that Alternative could be considered net additional job opportunities in San Francisco. The number of direct jobs associated with the actual workings of the cruise terminal itself would still be relatively small. Indirect and induced economic activity in retail, hotel, and assembly/entertainment/recreation, transportation, and other business support services would probably support a larger number of jobs. Some of those job opportunities are quantified in the larger amounts of retail, assembly/entertainment/recreation, and hotel employment located in the Project Area under Alternative B.

Some of the larger increase in assembly/entertainment/recreation employment in the Project Area under Alternative B compared to the other Alternatives (1,400 additional jobs compared to the No Project Alternative and 1,130 compared to Alternative A) also could represent a net addition to San Francisco job opportunities. Under Alternative B, successful regional attractions are assumed to be developed in the Project Area. Some of those attractions could be developed in the Project Area to take advantage of the unique features and appeal of the waterfront location. Some of the job opportunities offered would be net additions to the base case scenario and would not be shifts from elsewhere in San Francisco. The net additions would be small compared to the 103,363 additional jobs forecast for San Francisco between 1995 and 2010.

JOBS AND HOUSING

The goals of the WLUP include a commitment to provide for the needs of a working waterfront -- to provide land to meet the needs of water-dependent activities, to provide new jobs for San Franciscans, to establish and maintain the Port as a fiscally sound entity, and to promote the Port's public trust responsibilities: "to promote maritime commerce, navigation and fisheries, as well as to protect natural resources and develop recreational facilities for public use on these public lands."[3] Within the overall context of Statewide land use planning and resource allocation, waterfront property is reserved as a location for water-dependent commerce and the relatively unique job opportunities supported by those types of economic activity, and for public access and recreation. Housing development is not a permitted use for public trust property. Similarly, within the context of San Francisco's Master Plan, waterfront property is to be used first and foremost for water-dependent commerce and industry, to promote jobs and diversity of job opportunities in San Francisco, and for public access and recreation.

Considering the broader planning context for waterfront property that recognizes the special characteristics setting it apart from other land resources, it is not appropriate to expect that development in the Project Area would include amounts of housing sufficient to contribute to improving the balance between jobs and housing in San Francisco. If Port property were found to be surplus to the needs of the public trust and general office uses were to be developed, offices would be subject to the City's Office Affordable Housing Production Program (OAHPP), City Planning Code Sections 313 to 313.14, which require development of affordable housing or payment of an in-lieu fee.

The different development scenarios for the Project Area as illustrated by the EIR Alternatives would make different contributions to San Francisco's housing market in the future, however. The following section identifies those differences and any implications thereof.

PROJECT AREA CONTRIBUTIONS TO THE CITY'S HOUSING MARKET

Housing Market Conditions in San Francisco

The Mission Bay EIR (certified August 23, 1990) describes the factors that contribute to regional and San Francisco housing markets characterized by strong demand, high prices and rents, and limited supply of affordable housing. The Mission Bay EIR also describes expected future housing market conditions in San Francisco.[4] That EIR points out that those conditions are likely to prevail for some time into the future.

For the most part, those conclusions remain valid. While job-growth-induced demand may have slowed and expectations for future job growth are lower than they were at the time the Mission Bay EIR was prepared, demand for housing remains high due to increases in household formation, immigration, and the pent-up demand for affordable housing. Moreover, since the late 1980's, increases in housing production have slowed,[5] and financial resources for housing investment and for housing subsidies are more limited.

Employment growth and housing development in the Project Area would be part of the cumulative scenario of housing demand and supply in San Francisco in the future. The contributions of the EIR Alternatives to Citywide housing demand and supply would be small. Housing market conditions in San Francisco would not differ substantially under one Alternative compared to another. Nevertheless, because of differences in the amount and characteristics of Project Area development illustrated by the Alternatives, there are some differences among the Alternatives in their contributions to housing demand and supply. Those contributions are described below.

Contribution of Project Area Employment Growth to Housing Demand

All Alternatives

Employment growth in the Project Area under each Alternative would contribute to housing emand in San Francisco. The contribution would be small because the number of additional jobs expected in the Project Area under all Alternatives would be small and would represent a relatively small share of total Citywide employment growth (see Table 30, p. 434). Moreover, the **differences among the Alternatives** in terms of **cumulative** housing demand are even smaller, because most of the differences in employment growth in the Project Area represent employment growth that would otherwise occur elsewhere in San Francisco. For example, to the extent the larger amount of retail employment growth in the Project Area under Alternative A represents employment growth accommodated in development that would otherwise have occurred in the South of Market or Mission Bay, there would be no difference in the cumulative demand for housing in San Francisco associated with that employment growth. In addition, employment growth is only one of the factors that contribute to housing demand (other factors include population change, average household size and the formation of households, and the ability to pay for housing).

Project Area employment growth under each Alternative would be a small part of the cumulative demand for housing in San Francisco that is expected to maintain tight housing market conditions in the City for the foreseeable future.

No Project Alternative

There would only be about 1,600 additional jobs in the Project Area by 2010 under the No Project Alternative -- less than two percent of total expected job growth in the City from 1995 to 2010 (see Table 29, p. 432). As part of the base case scenario of employment growth in San Francisco that contributes to housing demand in San Francisco, Project Area employment growth between 1995 and 2010 under the No Project Alternative would make some contribution to cumulative housing demand in the City. Compared to the other Alternatives, the No Project Alternative would contribute the least to future housing demand in San Francisco.

Alternative A

The overall job growth scenario for Alternative A is similar in magnitude to the scenario for the No Project Alternative. Between 1995 and 2010, employment in the Project Area would increase by about 2,500 jobs -- 2.5 percent of total expected San Francisco job growth from 1995. This employment growth would contribute to cumulative housing demand in San Francisco. The contribution would be greater than under the No Project Alternative and less than under Alternative B.

Alternative B

Job growth would be greatest in the Project Area under Alternative B: an additional 6,800 jobs, about seven percent of total 1995 - 2010 job growth in San Francisco. The Alternative B scenario incorporates the combination of water-dependent activities (passenger cruises and cargo-shipping) and assembly/entertainment/recreation activities capitalizing on the waterfront location that represent additions to San Francisco's economic base beyond what is otherwise expected. Therefore, compared to the other Alternatives, job growth in the Project Area under Alternative B would add the most to cumulative housing demand in San Francisco. The effects on Citywide housing market conditions would be small, however. The estimated increase in employment under Alternative B would be about seven percent of the total forecast growth in employment in the City, and (as stated previously) some of the employment increase in the Project Area would represent employment growth that would otherwise occur elsewhere in San Francisco.

Contribution of Project Area Housing Development to Supply

All Alternatives

Any housing developed on Port property in the Project Area would require that the site be declared surplus to maritime needs and thus no longer subject to the public trust regulation prohibiting residential uses on San Francisco waterfront property. Consistent with past experience in the South Beach area, two of the Alternatives assume that some residential development would be permitted on seawall lots near complementary adjacent neighborhoods.

Because of the Burton Act public trust limitations, seawall lots in the Project Area are not counted in the inventory of undeveloped sites, soft sites, and housing opportunity sites that are the basis for housing potential estimates in San Francisco's *Residence Element*.[6] Therefore, any housing development in the Project Area could be considered a net addition to the City's potential future housing supply and thus a benefit to the City's tight housing market conditions. Unlike the market situation for non-residential development, the housing market situation in San Francisco is such that new residential development on seawall lots in the Project Area would not represent a shift from other locations in the City. While new residential development in the Project Area might affect the timing for development and absorption of other new residential development South of Market or in Mission Bay, it is likely that the number of units that could be successfully developed along the waterfront would add to the total housing supply in San

Francisco within the forecast period. Given the overall mix of uses intended for the Project Area under the WLUP, the number of residential development projects and the number of housing units would be small in any case, however.

No Project Alternative

Only a small amount of residential development (one project of less than 100 units) is included in the generally low-level, incremental Project Area development scenario for the No Project Alternative. Any benefits of this additional supply for the City's housing market would be negligible. The contribution to Citywide housing supply would be less than under Alternative A but more than under Alternative B.

Alternative A

Compared to the other Alternatives, Alternative A would add the most new housing development in the Project Area (just over 200 units are assumed for the 1995 - 2010 period). Alternative A would contribute more to Citywide housing supply than would the other Alternatives. The benefit for overall housing market conditions would be small, nonetheless, because the number of units expected would be small in the context of overall housing supply in San Francisco. (About 30,000 units are projected to be added between 1995 and 2010, bringing total housing supply in San Francisco to 356,000 in 2010.) The residential development would occur on seawall lots in the Northeast Waterfront and South Beach/China Basin subareas. It would be an outgrowth of adjacent, relatively new residential neighborhoods to the north and south of the Financial District.

Live-work development accommodated in the Project Area would also contribute to increasing the supply of housing. Although it is not apparent in tables describing Project Area land use, Alternative A incorporates live-work development in the South Beach/China Basin and Southern Waterfront subareas of the Project Area. That development would enhance the benefit that Alternative A already would represent to the City's housing market, relative to the No Project Alternative and Alternative B.

Alternative B

There would be no housing developed in the Project Area under Alternative B and therefore no supply-side contributions to the housing market in San Francisco.

JOB OPPORTUNITIES IN CONSTRUCTION AND ONGOING FACILITY MAINTENANCE

Construction-Period Employment

New development, renovation and reuse, and other capital improvements to Port facilities in the Project Area would generate jobs for construction labor. Table 31 presents the estimates of one-time construction jobs associated with non-water-dependent development under each Alternative. The estimates of construction employment are based on estimates of development costs for non-water-dependent development and other assumptions. They are therefore directly related to the amount and type of non-water-dependent development assumed to occur under each Alternative. The estimates are intended to illustrate the pattern of difference among the Alternatives. They do not represent a comprehensive estimate of construction labor. Some items associated with new development in the Project Area, such as demolition, pier reinforcement, toxic remediation, and other site-specific components, are not included in the estimates of development cost on which the construction labor estimates are based.[7]

The No Project Alternative would generate the fewest construction job opportunities, about 800 person-years of construction labor over the 15-year period, an average of 53 person-years each year. Under Alternative A, there would be at least three times as many construction job opportunities in the Project Area over the 15-year development period. Compared to the No Project Alternative, Alternative B would generate more than four times as many person-years of construction labor.

The estimates above only indicate the differences among the Alternatives due to different levels of non-water-dependent development. Water-dependent development such as a new cruise terminal, new excursion and ferry terminals, the Hyde Street Harbor and Pier 45 projects, the tunnel improvement project, and other improvements to cargo shipping facilities, would also generate jobs for construction labor. Other public improvements such as public access and recreational boating facilities would also support additional construction jobs. The actual amount would depend on the level of spending, which depends on the funds available, which depends on the magnitude of revenue-generating development on Port property, among other factors.

For total construction labor, the differences among the Alternatives would follow the same pattern indicated above for non-water-dependent development. Some water-dependent capital

TABLE 31: ONE-TIME CONSTRUCTION EMPLOYMENT, WATERFRONT LAND USE PLAN EIR ALTERNATIVES

	No Project Alternative	Alternative A	Alternative B
Construction Jobs /a/	700	2,200	3,200
On-site Project Management/b/	140	440	640
TOTAL	840	2,640	3,840

/a/ Total person-years of construction labor. A person-year is equivalent to one construction worker's labor, full-time for one year.

/b/ Assumes an additional 20 percent for on-site project management.

SOURCE: Recht Hausrath & Associates

improvements are common to all the Alternatives, e.g., Hyde Street Harbor and Pier 45, and the Ferry Terminal Expansion Project. Others are more dependent on the ability of other development on Port property to generate revenues to fund the improvements. Therefore, the more non-water-dependent revenue-generating development in the Project Area under the WLUP, the higher the level of capital improvements expected for water-dependent activities, pier rehabilitation, public access, and open space, and the more one-time construction employment opportunities associated with that capital spending along the waterfront.

Facility Maintenance and Repair Employment

On-going maintenance of Port facilities also supports jobs in the construction sector. Some capital spending for maintenance and repairs supports Port staff positions. The Port also contracts out for some maintenance and repair work. Some of the jobs supported by this Port spending are counted in the estimates of Port employment and maritime support employment in the Project Area.

Although the needs have increased, Port spending for maintenance and repairs has declined as the financial resources available have decreased. That trend would continue under the No

Project Alternative. Under Alternatives A and B, the Port would have more financial resources to support ongoing maintenance activities and associated construction labor. There would be more resources under Alternative B than under Alternative A. On the other hand, while new development of non-maritime uses as well as improvements to maritime facilities would support one-time construction jobs, those improvements might also reduce the backlog of deferred maintenance, and, for some period of time, may reduce demands for repair and maintenance of Port facilities. Over the longer term, Alternative B, with the most water-dependent activity and improvements, would generate more facility maintenance and repair work (supporting both Port staff and contractors), than would Alternative A.

NOTES - Population, Housing and Employment

[1] The cargo shipping forecast used for the Alternative B scenario is based on forecast allocations developed for the update to the Seaport Plan. These forecasts are described in Appendix D.

[2] The job estimates for cargo shipping and for other water-dependent activities represent full-time-equivalent positions. Those positions may actually represent more workers, many of whom work part-time, or seasonally, as needed, at one job or more.

[3] Port of San Francisco, *Draft Waterfront Land Use Plan*, revised January 1995, page 1.

[4] Department of City Planning, City and County of San Francisco, *Mission Bay, Final Environmental Impact Report*, certified August 23, 1990, pp. VI.C.1 - VI.C.6 and VI.C.81 - VI.C.84.

[5] San Francisco Planning Department, *Changes in the Housing Inventory for 1993 and 1994*, Housing Information Series, August 1995.

[6] See Residence Element of the Master Plan of the City and County of San Francisco, adopted September 13, 1990, Table 51, page 53; and San Francisco Department of City Planning, *Residence Element Housing Opportunity Sites: An inventory of land suitable for residential development*, December 1989.

[7] The estimates of construction jobs are based on the methodology used by Economic & Planning Systems in *Financial and Economic Analysis of Test Scenarios for the Port of San Francisco Waterfront Land Use Plan*, December 1993. Recht Hausrath & Associates updated the construction cost assumptions and the average annual construction wage assumptions to 1995 dollars.

D. TRANSPORTATION

Two levels of transportation are analyzed and described for potential impacts associated with implementation of the Waterfront Land Use Plan (WLUP). The first level, regional impacts, examines travel projected to occur due to employment and population growth throughout the Bay Area with origins in and destinations to the waterfront, combined with new travel attributable to the WLUP. The second level of potential impacts is associated with more localized travel projected to occur due to land use development within the Project Area attributable to the WLUP, as well as development outside the Project Area that would generate travel within the larger study area. Land use and transportation characteristics associated with the three EIR Alternatives have been analyzed at a program level (rather than a site- and project-specific level of detail) and are discussed below.

ANALYSIS, METHODS AND ASSUMPTIONS

This section presents the methods and key assumptions used to analyze potential transportation impacts of the three EIR Alternatives within the context of cumulative transportation conditions created by projected growth in regional travel in year 2010.

Baseline Assumptions for Transportation Impact Analysis

In order to develop projections of future (year 2010) cumulative transportation demand, demographic and economic data were used along with current travel characteristics as factors in developing travel demand forecasts. The Metropolitan Transportation Commission (MTC) maintains a computerized travel demand model that was used to produce the cumulative travel forecasts used in this EIR analysis, based on forecasts of housing, population and employment growth prepared by the Association of Bay Area Governments (ABAG) in 1992 and revised ("Projections '92 Revised"). The MTC travel demand model is able to quantify shifts in travel patterns due to changes in land uses and roadways, changes in travel modes (shifts in percentages of trips made by automobiles and transit due to anticipated improvements to transit access), as well as other factors such as traffic congestion and parking costs.

The WLUP EIR transportation analysis is based on the assumption that development occurring along the waterfront would be a part of forecast City and regional growth and would therefore not create any net new population or employment growth (or at most, minor net new growth) in the City or the region. The implication of this “no net new growth” assumption is that any development along the waterfront as a result of the WLUP beyond that currently forecast by ABAG would cause another area within San Francisco, or perhaps elsewhere in the region, not to develop as fully as ABAG had projected. Thus, the WLUP would mostly result in a shift in the location of growth, including growth in trips. (Refer also to Section V.B., Environmental Impacts, Land Use and Growth-Inducing Impacts, pp. 396-429, and Section V.C., Environmental Impacts, Population, Housing and Employment, pp. 430-445.)

While it is assumed that the WLUP would largely result in a shift in the location of growth, with perhaps some negligible net new growth regionally in employment or population, certain land uses assumed in the EIR Alternatives to occur within the Project Area would be visitor-intensive and would therefore generate numbers of trips disproportionate to any assumptions regarding growth in population or employment. Assembly/Recreation/Entertainment (A/E/R) uses in particular and, to a lesser extent, some cargo shipping activities, are major trip generators. The traffic analysis shows that at certain locations on regional screenlines, land use development assumed in the WLUP (especially under Alternative B, as discussed later) could potentially generate sufficient numbers of new trips such that the total trip volumes analyzed in this EIR at those locations could exceed the total number of new trips that had been projected by MTC for 2010. This condition would be caused by some combination of the following factors: (1) some shifting of regional trips from other locations on the regional transportation system because of certain types of development assumed to occur in the Project Area instead of elsewhere in San Francisco or the region; and (2) some possible new trip growth in the region, to the extent these uses would not have occurred elsewhere as noted above. In some EIR Alternatives the nature of employment in San Francisco is expected to change due to A/E/R and cargo shipping uses assumed, which could generate more or less trip making (both work trips and other trips) than was assumed under the ABAG/MTC projections for 2010. The transportation analysis in this EIR therefore measures possible changes to traffic volumes at regional and local screenline locations resulting from this shift. It is further assumed that, because of these regional shifts in travel, other facilities within the City and the region could experience some reduction in travel corresponding in part to the increases shown in this analysis for a particular facility and location, although it is impossible to determine on which facilities such reductions could occur or to quantify the compensating reduction.

While it is not possible to anticipate and analyze every conceivable future land use pattern, the WLUP EIR Alternatives represent a reasonable range of land use scenarios, with Alternative B involving maximum overall 2010 growth potential. The resultant transportation analysis for

Alternative B, therefore, represents the most severe transportation impacts that could reasonably result from the WLUP. Specific proposals for development in the Project Area would be subject to further environmental impact analysis to determine the extent of site-specific transportation impacts that might occur.

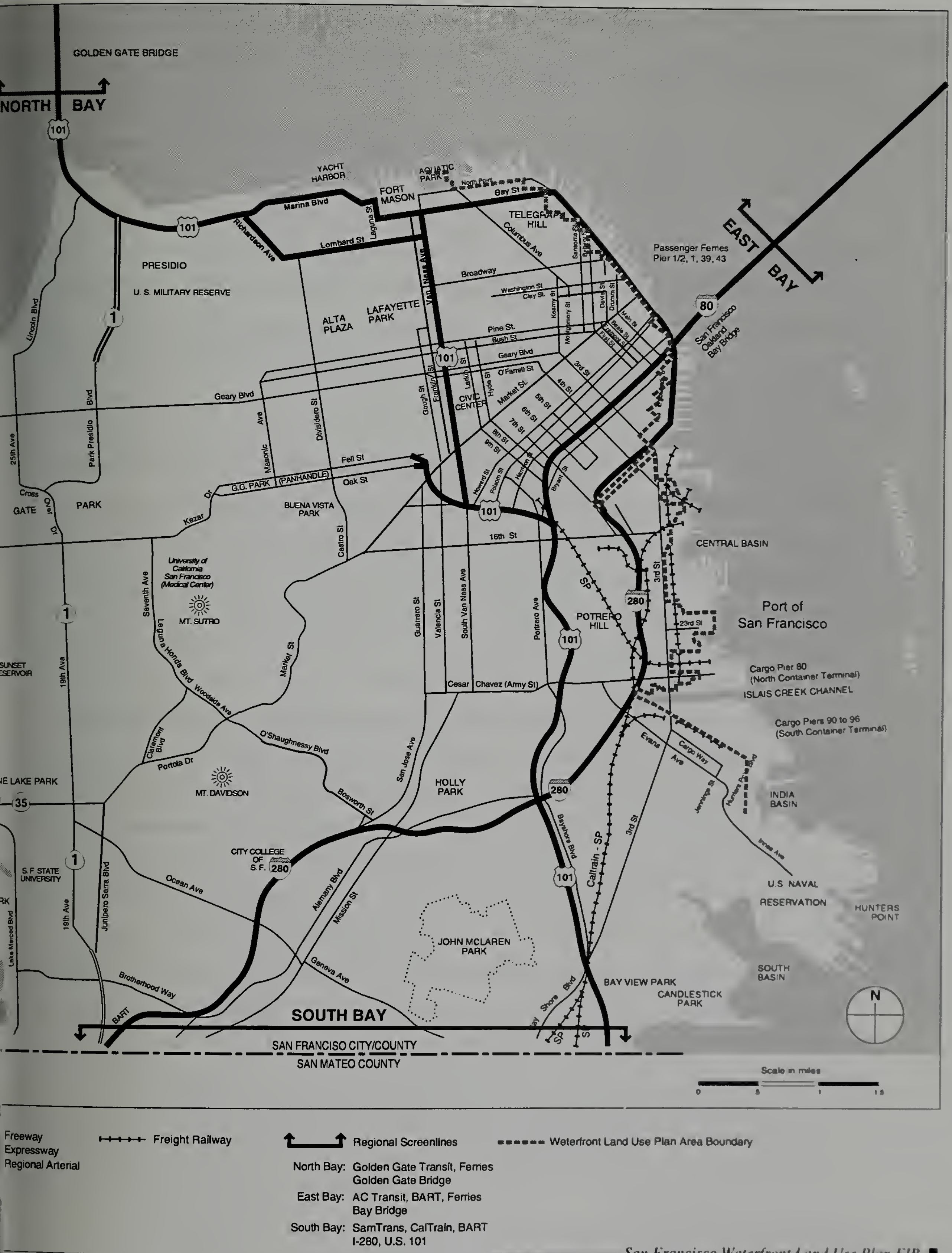
Not all programming decisions about regional transportation improvements have been made for the year 2010. Therefore, the assumed 2010 regional transportation network includes only those projects which are fully funded at this time. In the case of the 1989 earthquake replacement transportation projects and other local transportation-related planning within the City and County of San Francisco, assumptions have been made which reflect currently known preferences for such projects.

The transportation impacts methodology is detailed in Appendix F (Transportation) and summarized below. Impacts of the WLUP have been analyzed in a manner consistent with recognized methodologies for analyzing both regional and local impacts. There are five components to the transportation analysis: traffic, transit, parking, pedestrian/bicycle activity, and goods movements.

Regional Traffic Analysis

The concept of transportation screenlines is used to describe the magnitude of travel to and from large areas. Regional screenlines are hypothetical delineations that could be crossed by travelers between the City and the rest of the region. The three regional screenlines are shown on Figure 48 and involve project traffic with origins from or destinations to (1) the North Bay at the Golden Gate Bridge; (2) the East Bay at the Bay Bridge; and (3) the South Bay using U.S. Highway 101 (U.S. 101) and Interstate 280 (I-280) at the San Francisco - San Mateo county line.

As stated earlier, MTC regional travel forecasts were used to represent year 2010 travel characteristics for the City and the region, and to establish the cumulative impact context for analyzing projected travel associated with the WLUP. The MTC forecasts assume no additional highway capacity to or within San Francisco beyond 1995 conditions. However, planned changes for San Francisco access to the regional highway system were assumed, as described under Local Traffic Assumptions, below.



Draft 1994 Regional Transportation Plan, MTC Graphics, 6/13/94, and San Francisco Planning Department

San Francisco Waterfront Land Use Plan EIR ■

Figure 48

Regional Screenlines

Local Traffic Assumptions

Several changes to the future local roadway network and traffic control devices were assumed to have taken place between the existing conditions and the future analysis year of 2010. The first is completion of the reconstruction of The Embarcadero from North Point Street in the Fisherman's Wharf subarea to Third and King Streets in the South Beach/China Basin subarea. The North Embarcadero section was completed in late 1995, and South Embarcadero segment improvements have also been completed. An EIR/EIS on the alternatives for the Mid-Embarcadero segment is scheduled to be finalized in 1996, prior to decisions about specific improvements and construction.

Assumed future roadway cross-sections and lane configurations for The Embarcadero were obtained from the Department of Parking and Traffic. The existing I-280 ramps at Fourth and Berry Streets were assumed to be replaced by ramps at Fifth Street and King Street. The ramps at Sixth and Brannan Streets will remain. Alternative 3A from the *Draft Transportation Technical Report for the Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Structure* (Mid-Embarcadero/TSS Study), prepared on November 22, 1994, and revised on May 15, 1995, was the alternative assumed for development of that portion of The Embarcadero, as no decisions regarding the alternatives had been made at the time the WLUP EIR transportation analysis was performed. At the time of this analysis there were a number of alternatives under consideration in the Mid-Embarcadero/TSS Study which would deliver the same amount of traffic to the WLUP Project Area, including Alternative 3A. In addition, at the time of the WLUP analysis Alternative 3A appeared to be the preferred alternative for the Mid-Embarcadero/TSS replacement, and was therefore assumed as the alternative for purposes of the WLUP analysis. Although Alternative 3A may not be the alternative selected for the Mid-Embarcadero/TSS, no other Mid-Embarcadero/TSS alternative analyzed would result in changes to the levels of service at the analyzed intersections. The following summarizes improvements included in this alternative:

- surface roadway reconstruction of The Embarcadero between Howard Street and Broadway to include two travel lanes; a left-turn pocket plus a parking lane and a Class 3 bicycle route in each direction; parking lanes convertible to a third travel lane during peak periods; promenade on the Bay side; sidewalk on the land side; and northbound bus bays in front of Ferry Building;

- surface roadway realignment of The Embarcadero between Folsom and Howard Streets to include two travel lanes and a Class 3 bicycle route; a parking lane, convertible to a third travel lane during peak periods; and Bay-side promenade (new between Folsom and Harrison Streets);

new on-ramp from west of Harrison/Essex Streets to I-80 westbound and U.S. 101 southbound;

new off-ramp from I-80 eastbound to Second Street;

Fremont Street off-ramp realignment from the Bay Bridge (I-80 westbound); and

Davis Street opening to vehicular traffic between Clay and Washington Streets.

lew traffic signals were assumed to control the following intersections: Jefferson and Jones, hird and King, Fourth and King, and The Embarcadero at Beach, North Point, Battery, rannan, and Bryant Streets. As part of the rerouting of traffic that will occur with the ompletion of The Embarcadero reconstruction, the intersection of The Embarcadero at roadway will have fewer northbound left-turning vehicles. Many of these vehicles will turn at /ashington Street in the future. It is assumed that northbound left-turns onto Harrison Street om The Embarcadero will not be allowed since construction plans do not show a left-turn ocket at this intersection.

uture project and cumulative traffic on local streets (as well as the existing conditions) were nalyzed for the weekday P.M. peak hour and the Saturday midday peak hour. The intersection vel of service methodology used for this EIR employed the Transportation Research Board ighway Capacity Manual (HCM), Special Report 209, for signalized intersections and minor reet stop intersections. Circular 373 was used for the all-stop intersections. This methodology further discussed in Appendix F.

transportation network was prepared using the TRAFFIX model, which represents future adway conditions using the assumptions and methodologies cited above. The network for the aterfront transportation study area contains 24 intersections in 13 TRAFFIX zones, as shown in ppendix F. Boundaries of the 13 TRAFFIX zones were defined by considering the adjacent eet network access to the waterfront and the relationship of the proposed land uses on adjacent ers.

ip generation, distribution to various directions of travel, and mode splits were developed for ch of the three EIR Alternatives. The number of trips for each land use category proposed in ch of the three EIR Alternatives was generated using rates from a variety of sources. To assist in developing local future traffic projections for the study intersections for the weekday P.M. peak hour and Saturday midday peak hour, traffic volumes developed for the Mid-Embarcadero/TSS Study were used. Year 2015 data from nine study intersections of the Mid-Embarcadero/TSS Study in common with the project study area were used to compute an annual growth factor, which was then applied to existing conditions to interpolate 2010 traffic volumes for these common intersections. These nine intersections are The Embarcadero at Sansome, Battery, Broadway, Washington, Mission, Folsom, Harrison, Bryant, and Brannan. To obtain 2010 forecasts at the remaining 15 WLUP study intersections, growth factors were applied to the existing 1993 baseline volumes depending on location. A weekend growth factor was developed using the same methodology employed for the weekday P.M. peak hour volumes.

Transit Assumptions

Similar to the regional traffic analysis, screenlines are used in this analysis to measure existing conditions and compare both future projections and potential impacts of the EIR Alternatives to transit operators. The regional transit screenlines are the same as the highway screenlines: (1) the Golden Gate for Golden Gate Transit buses and ferries and Blue and Gold ferries; (2) San Francisco Bay for BART to the East Bay, AC Transit, and ferry services; and (3) the San Francisco - San Mateo county line for Bart to the Peninsula, CalTrain and SamTrans (Figure 48, p. 449). Screenlines are also used to determine conditions on Muni, generally measuring demand from the downtown area to four quadrants of the City (Northeast, Northwest, Southeast and Southwest) which roughly correspond to the four MTC Superdistricts of San Francisco.

Planned transit projects programmed to be constructed by the year 2010 were assumed. For the purposes of this EIR, major transit capital projects that are assumed include:

- Muni Metro Turnaround at The Embarcadero (MMT);
- Muni Metro extension to Sixth Street (MMX);
- extension of the F-Line electric streetcar service to Fisherman's Wharf along the median of The Embarcadero to Jefferson and to a terminal at Jones and Beach Streets (the F-Line service will operate year round);
- BART service extension to Colma, and to San Francisco International Airport along with other Peninsula stations, along with service headway reductions from the existing 3.75 minutes to between 2.25 and 2.5 minutes;

- CalTrain service extension to downtown San Francisco with some service level increases; and
- additional ferry service to the East Bay.

Additionally, it is assumed that Muni (by policy) would increase its current Citywide capacity to serve increased cumulative demand. Citywide capacity increases were estimated based on the Muni 1995-2005 Short Range Transit Plan (October 1995).

Pedestrian Facility Assumptions

After reconstruction, The Embarcadero between Folsom Street and Broadway will have crosswalks at every intersection (Folsom, Howard, Mission, Washington, and Broadway). In addition, there will be four midblock crosswalk locations: the Ferry Building, the Muni layover area near Spear Street, Pier 3, and Pier 5. The planned promenade along the bayside of The Embarcadero will be 20 feet wide. Landside of The Embarcadero is assumed to be improved with sidewalks. Bicycle facilities are also assumed to be improved along The Embarcadero.

TRIP GENERATION

Standard trip generation rates for the various land use types included in the EIR Alternatives, from a variety of sources, were used to determine the total person trips generated by the EIR Alternatives in each subarea. In some cases, most notably for Assembly/Entertainment/ Recreation land uses, it is known that some of the trips generated by uses developed under the WLUP would not be new trips to and from the Project Area, but would represent trips to these new uses made by persons already traveling to and from other new uses, as well as existing uses, within the Project Area ("linked trips"). Therefore, to determine the total net increase in trip making, adjustments were made to the trip generation rate for Assembly/Entertainment/ Recreation uses, reducing the rate to account for these existing trips (refer to Appendix F for more detail).

Total net new person trips for each subarea that would be generated for each EIR Alternative are hown in Table 32. These person trips are those that would be generated by the project, between he Project Area and other parts of San Francisco and the region. They do not include the small ercentage of total trips generated that would be internal to the 13 small traffic zones used in the nalysis. It is assumed that internal trips, such as a visitor walking from one store to another or

TABLE 32: SUMMARY OF TRIP GENERATION YEAR 2010 NET NEW PERSON-TRIPS

	No Project	Alternative A	Alternative B
P.M. PEAK HOUR			
Fisherman's Wharf Subarea	60	585	875
Northeast Waterfront Subarea	820	1,430	7,755
Ferry Building Subarea	635	795	660
South Beach/China Basin Subarea	-90	1,520	7,660
Southern Waterfront Subarea	35	970	2,395
TOTAL	1,460	5,300	19,345
SATURDAY MIDDAY PEAK HOUR			
Fisherman's Wharf Subarea	45	575	1,000
Northeast Waterfront Subarea	670	1,440	10,580
Ferry Building Subarea	795	1,090	640
South Beach/China Basin Subarea	-75	1,570	10,675
Southern Waterfront Subarea	35	990	2,180
TOTAL	1,470	5,665	25,075

NOTE: All numbers have been rounded.

SOURCE: Wilbur Smith Associates, April 1995, and the San Francisco Planning Department, December 1995

an employee going out for lunch, would be made almost exclusively from one use to another within the project. Such an exit from one use and entrance to another is counted as part of the trip generation rate for each use individually. Therefore, to include them in Table 33 could be double counting.

Net new vehicle trips, transit trips, pedestrian trips and other trips for the weekday P.M. peak hour for each project subarea are shown in Table 33 for the three EIR Alternatives. Saturday midday peak hour trips are shown in Table 34, p. 456. There are some differences in reported data between Table 32 and Tables 33 and 34 due to rounding and vehicle occupancy rates used to

TABLE 33: SUMMARY OF NET NEW TRIP GENERATION BY MODE, SUBAREA AND ALTERNATIVE - YEAR 2010 WEEKDAY P.M. PEAK HOUR

Alternative and Subarea	Vehicle Trips	Transit Trips	Pedestrian Trips	Other Trips
No Project Alternative				
Fisherman's Wharf Subarea	15	25	10	5
Northeast Waterfront Subarea	35	235	310	50
Ferry Building Subarea	110	125	345	35
South Beach/China Basin Subarea	-20	-65	10	-10
Southern Waterfront Subarea	10	15	5	0
TOTAL	150	335	680	80
Alternative A				
Fisherman's Wharf Subarea	110	155	250	25
Northeast Waterfront Subarea	120	355	655	65
Ferry Building Subarea	140	165	410	30
South Beach/China Basin Subarea	470	210	315	45
Southern Waterfront Subarea	310	160	165	30
TOTAL	1,150	1,045	1,795	195
Alternative B				
Fisherman's Wharf Subarea	160	210	395	35
Northeast Waterfront Subarea	1,280	2,090	2,975	400
Ferry Building Subarea	125	165	275	30
South Beach/China Basin Subarea	1,065	1,550	1,270	600
Southern Waterfront Subarea	735	450	470	80
TOTAL	3,365	4,465	5,385	1,145

NOTES: These data (except pedestrian trips) only include the trips assigned to the four quadrants of the City- Northeast, Northwest, Southeast, and Southwest which correspond to the MTC Superdistricts 1, 2, 3 and 4, respectively; and the North Bay, East Bay and South Bay. They include trips inbound to the Project Area and outbound from the Project Area, but they do not include those trips that are internal to a TRAFFIX zone. For pedestrian trips, both the trips into and out of TRAFFIX zones and the trips distributed within TRAFFIX zones are presented. All calculations have been rounded.

SOURCE: Wilbur Smith Associates, August 1995 and San Francisco Planning Department, December 1995

TABLE 34: SUMMARY OF NET NEW TRIP GENERATION BY MODE, SUBAREA AND ALTERNATIVE - YEAR 2010 SATURDAY MIDDAY PEAK HOUR

Alternative and Subarea	Vehicle Trips	Transit Trips	Pedestrian Trips	Other Trips
No Project Alternative				
Fisherman's Wharf Subarea	10	10	10	0
Northeast Waterfront Subarea	0	160	315	30
Ferry Building Subarea	145	180	390	35
South Beach/China Basin Subarea	-20	-45	0	-10
Southern Waterfront Subarea	10	5	5	0
TOTAL	145	310	720	55
Alternative A				
Fisherman's Wharf Subarea	105	130	280	25
Northeast Waterfront Subarea	135	340	685	60
Ferry Building Subarea	200	265	500	50
South Beach/China Basin Subarea	480	210	340	45
Southern Waterfront Subarea	310	210	175	40
TOTAL	1,230	1,155	1,980	220
Alternative B				
Fisherman's Wharf Subarea	185	230	490	30
Northeast Waterfront Subarea	1,800	2,865	4,040	400
Ferry Building Subarea	115	150	310	30
South Beach/China Basin Subarea	2,945	2,175	1,765	820
Southern Waterfront Subarea	675	270	495	45
TOTAL	5,720	5,690	7,100	1,325

NOTES: These data (except pedestrian trips) only include the trips assigned to the four quadrants of the City- Northeast, Northwest, Southeast, and Southwest which correspond to the MTC Superdistricts 1, 2, 3 and 4, respectively; and the North Bay, East Bay and South Bay. They include trips into and out of the Project Area, but they do not include those trips that are internal to a TRAFFIX zone. For pedestrian trips, both the trips into and out of TRAFFIX zones and the trips distributed within TRAFFIX zones are presented. All calculations have been rounded.

SOURCE: Wilbur Smith Associates, August 1995 and San Francisco Planning Department, December 1995 calculate vehicle trips as opposed to person trips. Table 32, p. 454, shows total person trips while Tables 33 and 34 show trips by mode for the weekday and Saturday midday peak hours, respectively. Auto trips accounts for multiple passengers per vehicle trip. These tables show that substantially more trips are estimated for Alternative B in the Saturday peak hour than in the weekday P.M. peak hour. This reflects the different peaking characteristics of the land uses assumed in Alternative B. For example, specific uses that might be included in the Assembly/Entertainment/Recreation land use category might tend to generate more travel demand during a single hour on a weekend afternoon than during the typical weekday afternoon commute peak hour.

No Project Alternative

Table 32 indicates that the No Project Alternative would result in the least number of new person rips: 1,460 new weekday P.M. peak hour person trips and approximately 1,470 new Saturday midday peak hour person trips. As shown on Table 33, the No Project Alternative is projected to generate approximately 150 vehicle trips, 335 transit trips, 680 pedestrian trips, and 80 other rips for the weekday P.M. peak hour. In the South Beach/China Basin subarea, the total number of net new person trips would be reduced under the No Project Alternative due to a net loss in and uses which generate larger numbers of trips. The numbers of Saturday midday peak hour rips are similar.

Most net new trips for the weekday P.M. and Saturday midday peak hours would be generated in he Northeast Waterfront and Ferry Building subareas in the No Project Alternative, and most would be by transit and by foot. In the Fisherman's Wharf, South Beach/China Basin and outhern Waterfront subareas there would be relatively small net changes in all types of trips.

Alternative A

Alternative A would generate almost four times as many new trips than the No Project Alternative, with about 5,300 net new person trips during the weekday P.M. peak hour and 5,665 uring the Saturday midday peak hour, as shown in Table 32. The Northeast Waterfront and outh Beach/China Basin subareas would generate the most trips. The summarized data in able 33 show that about 1,150 net new vehicle trips, 1,045 transit trips, 1,795 pedestrian trips, nd 195 other trips are expected to be generated for the weekday P.M. peak hour throughout the aterfront under Alternative A. Net new trips for the Saturday midday peak hour include approximately 1,230 vehicle trips, 1,155 transit trips, 1,980 pedestrian trips, and 220 other trips under Alternative A.

This Alternative would generate approximately 110 vehicle trips, 155 transit trips, 250 pedestrian trips and 25 other trips in the Fisherman's Wharf subarea during the weekday P.M. peak hour. The Northeast Waterfront subarea would experience the most transit trips of all subareas, generating approximately 355 new transit trips. The Ferry Building subarea would experience increases in all modes of travel for the weekday P.M. peak hour. As shown in Table 33, p. 455, the South Beach/China Basin and Southern Waterfront subareas would experience the largest increases in vehicle trips (approximately 470 and 310, respectively) of the subareas. Pedestrian trips would also increase, especially in the Northeast Waterfront and Ferry Building subareas.

During the Saturday midday peak hour, as shown on Table 34, p. 456, the South Beach/China Basin subarea would generate the most net new vehicle trips (approximately 480 vehicle trips), followed by the Southern Waterfront (310 vehicle trips). The Northeast Waterfront subarea would generate the most transit (340) and pedestrian (685) trips, followed by the Ferry Building subarea.

Alternative B

Alternative B would generate the most net new person trips: approximately 19,345 on an average weekday P.M. peak hour and 25,075 during a Saturday midday peak hour, as shown in Table 32, p. 454. Alternative B would generate about 15 times as many person trips as the No Project Alternative, and four times as many trips as Alternative A. As shown in Table 33, p. 455, Alternative B would produce about 3,365 vehicle trips, 4,465 transit trips, 5,385 pedestrian trips, and 1,145 other trips during the weekday P.M. peak hour. Over three-quarters of these trips are due to the Assembly/Entertainment/Recreational uses assumed for the Northeast Waterfront and South Beach/China Basin subareas.

Under Alternative B, the Fisherman's Wharf and Ferry Building subareas would produce the smallest increases in net new trips of the five subareas. The Northeast Waterfront would experience the most transit and pedestrian trips of all subareas. This EIR Alternative would also generate relatively large numbers of trips for the South Beach/China Basin subarea, including the most vehicle trips and the second largest number of transit and pedestrian trips next to the

Northeast Waterfront subarea. In the Southern Waterfront subarea the majority of the trips would be in vehicles (approximately 735), followed by 470 pedestrian trips and 450 transit trips.

During the Saturday midday peak hour, Alternative B would generate approximately 5,720 net new vehicle trips, 5,690 transit trips, 7,100 pedestrian trips and 1,325 other net new trips. Similar to the weekday P.M. peak hour, the South Beach/China Basin and Northeast Waterfront subareas would generate most of the Saturday midday peak hour trips due mostly to the Assembly/Entertainment/Recreation uses under this EIR Alternative.

TRAFFIC IMPACTS ANALYSIS

Regional Traffic Impacts

The regional traffic analysis consists of determining the volumes of traffic generated by the EIR Alternatives passing through the three key regional screenline locations (as shown on Figure 48, p. 449) during the weekday P.M. peak hour. The three screenlines are the Bay Bridge, the Golden Gate Bridge, and the San Francisco - San Mateo County line including U.S. 101 and I-280.

The regional traffic analysis assumes that net new vehicle trips (over existing conditions) for the No Project Alternative are included in year 2010 projections made by MTC for traffic volumes at the regional screenlines. As described in the introduction to this chapter, the regional traffic analysis also assumes that some new growth in travel at these screenline locations, beyond that assumed in MTC's 2010 analyses, could occur in Alternatives A or B. This reflects primarily some shift in the location of regional travel because employment and population growth in the Project Area that might otherwise have occurred elsewhere would generate travel through different regional screenlines (or at least travel on the same transportation facility but perhaps in the opposite direction). It also reflects the potential in Alternative B in particular and, to a lesser extent in Alternative A, for modest additional trip growth beyond the MTC forecast because land use assumptions for the WLUP include uses that are highly trip intensive although they may not represent substantial increases in City or regional employment or population (for example, Assembly/Entertainment/Recreation uses and, to a lesser extent, some cargo shipping activities). Finally, as discussed in the introduction to this chapter, there is a potential under Alternative B in the WLUP for some amount of new regional employment growth within the Project Area. The amount of possible new job growth would be negligible in terms of its regional impact on employment and population. Nevertheless, as reflected in this analysis, the total number of new trips that such job growth might generate at the specific regional screenlines, a combination of both commute and non-commute travel, could be disproportionately higher than the total amount of new jobs.

The indicator used in this analysis of regional traffic performance is the volume-to-capacity (v/c) ratio. Volume and capacity are parameters most often used by traffic engineers to describe operational characteristics of a facility. This ratio indicates how much of the capacity of the freeway is being used by the traffic volume. Values approaching 1.0 indicate near saturation conditions (the roadway volume is nearly equal to its theoretical capacity and is therefore nearly 100 percent "full"), while a value in the mid-range, i.e., 0.5, indicates that traffic volumes are only 50 percent of the segment's total theoretical capacity, with the other 50 percent (the reserve capacity) being available for additional traffic growth. A v/c ratio greater than 1.0 results when demand exceeds the capacity of a facility to fully accommodate it, indicating that there would be substantial back-ups at entrance points to the system (freeway ramps). These v/c ratios are, therefore, relative measures of the degree of congestion on a facility, at a specific point on that facility, and to the extent values approach or exceed capacity, relative measures of the degree of back-up at entrance ramps. It should be noted that capacity numbers used for a facility are theoretical. The actual capacity can be affected by such considerations as speed, lane widths, number of interchanges or weaves or other conflicts, mix of traffic, and the like. While some adjustment to "textbook" capacity numbers have been made for this analysis to reflect conditions of the specific highway locations measured, at these Bay Area regional screenlines a v/c ratio in the range of 0.92 to 0.95 would be considered approaching maximum saturation, in the context of averaged volumes. For this analysis, a value exceeding 0.95 would indicate that the facility, at the point measured, is functioning at its maximum practical capacity. (Refer to Appendix F for further discussion.)

Table 35 presents 1993 and 2010 vehicle trip volume estimates, and v/c ratios for the weekday P.M. peak hour at the regional screenline locations. P.M. peak hour traffic volumes for existing and 2010 conditions on the Bay Bridge, U.S. 101 and I-280 were derived from the *Draft EIS/EIR for the Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Structure, August 25, 1995* and transportation studies being conducted for the Hunter's Point Shipyard Area Plan. Existing conditions data for the Golden Gate Bridge were derived from MTC's *San Francisco Bay Area State Highway System 1992/93 Observed Traffic Counts*, January 1995. Future 2010 volumes for the Golden Gate Bridge were projected by applying a

TABLE 35: REGIONAL TRAFFIC IMPACTS FOR THE WEEKDAY P.M. PEAK HOUR

		Existing Weekday P.M. Peak Hour/a/		Year 2010 P.M. Peak Hour/a/	
Screenline Location	Direction	Volume	V/C Ratio /b/	Volume	V/C Ratio
North Bay (Golden Gate Bridge)	North	6,440	0.84	6,630	0.87
	South	3,280	0.86	3,380	0.89
No Project Alternative	North	-	-	15/c/	0.87
	South			10	0.89
Alternative A	North	-	-	+35/d/	0.88
	South			+40	0.90
Alternative B	North	-	-	+160	0.89
	South			+130	0.92
East Bay (Bay Bridge)	East	9,190	0.80	9,970	0.87
	West	8,230	0.72	9,340	0.81
No Project Alternative	East	-	-	10	0.87
	West			5	0.81
Alternative A	East	-	-	+40	0.87
	West			+60	0.82
Alternative B	East	-	-	+260	0.89
	West			+230	0.83
South Bay (U.S. 101)	South	6,250	0.68	6,440	0.70
	North	6,350	0.69	6,540	0.71
No Project Alternative	South	-	-	15	0.70
	North			5	0.71
Alternative A	South	-	-	+35	0.70
	North			+50	0.72
Alternative B	South	-	-	+185	0.72
	North			+140	0.73
South Bay (I-280)	South	8,300	0.90	8,550	0.93
	North	3,950	0.43	4,070	0.44
No Project Alternative	South	-	-	15	0.93
	North			10	0.44
Alternative A	South	-	-	+35	0.93
	North			+45	0.44
Alternative B	South	-	-	+185	0.95
	North			+140	0.46

/ Data for existing conditions and future 2010 projections for the East Bay screenline were derived from the *Draft EIS/EIR for the Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Structure*, US Federal Highway Administration, CA Department of Transportation, and the City and County of San Francisco Planning Department, August 25, 1995; South Bay screenline data were derived from background transportation studies for the Hunter's Point Shipyard Area Plan and the North Bay screenline data were developed using the northbound 6 P.M. end hour data from the *San Francisco Bay Area State Highway System 1992/93 Observed Traffic Counts*, Metropolitan Transportation Commission, January 1995. A 3 percent growth rate was applied to the Golden Gate Bridge traffic to project a 2010 demand. All volumes have been rounded.

/ V/C ratio is the ratio of the volume of a roadway segment compared to its theoretical capacity.

/ The 2010 cumulative volumes are assumed to include the No Project Alternative project-related traffic volumes.

/ Net increases in volumes for Alternatives A and B project-related traffic volumes (over volumes generated by the No Project Alternative) were added to the cumulative 2010 traffic volumes to obtain total 2010 volumes including the project; the 2010 cumulative volumes are assumed to include the No Project Alternative project-related traffic volumes.

SOURCE: San Francisco Planning Department, January 1996 growth rate of 3 percent to the estimated existing volumes (see Appendix F for explanation of growth rate assumptions). The volumes used at all screenline locations are "median" or average counts, and on any given day will usually either exceed or be less than the values shown in Table 35, p. 461.

As shown in Table 35, the v/c ratios for existing conditions in the P.M. peak hour suggest that the North Bay screenline (Golden Gate Bridge) currently operates at a v/c of 0.84 in the northbound direction, and 0.86 southbound. There is reserve capacity in both directions. The East Bay screenline (the Bay Bridge) operates with v/c ratios of 0.80 eastbound and 0.72 westbound, indicating some capacity. The South Bay screenline has reserve capacity on U.S. 101 southbound with a v/c ratio of 0.68, while I-280 southbound has limited capacity with a v/c ratio of 0.90. Both highways have ample capacity in the northbound direction at the southern screenline.

Table 35 also shows that under the projected cumulative year 2010 conditions, v/c ratios at all locations would increase, indicating that reserve capacities on the freeways and bridges at the regional screenlines during the P.M. peak hour, as measured by the v/c ratios, would be reduced (constrained further) beyond existing conditions. Operating conditions would deteriorate due to increased volumes and congestion. For the North Bay screenline, the v/c ratio would be 0.87 northbound and 0.89 southbound. The v/c ratio for the East Bay screenline would be 0.87 eastbound and 0.81 westbound. The South Bay screenline at U.S. 101 southbound would continue to have reserve capacity with v/c ratios of 0.70. However, the South Bay screenline at I-280 southbound would be approaching capacity with a v/c ratio of 0.93. Both highways continue to have ample capacity in the northbound direction under the projected cumulative year 2010 conditions.

The v/c's calculated at the regional screenline locations do not necessarily reflect locations of maximum congestion on a particular facility, but rather only represent how close to maximum practical capacity a screenline location is becoming. For example, v/c conditions shown for the Bay Bridge are for the Bridge itself, which generally moves fairly well during the peak hour except during "incident" conditions. However, delays and congestion are experienced in the P.M. peak hour on the approaches to the bridge (eastbound I-80) including the San Francisco on-ramps to the Bay Bridge and some City streets leading to the on-ramps. The City streets and on-ramps which would continue to experience delay and congestion in the future include First and Folsom Streets leading to the First Street on-ramp, and Fourth and Folsom Streets leading to the ssex Street on-ramp. In addition, there are constraints along the East Bay freeway network vhich also add to the inability of eastbound bridge traffic to move freely towards their lestination. These constraints include the interchanges for traffic continuing on I-80 towards ichmond, the I-580 traffic southbound to downtown Oakland and beyond, and Highway 24 for astbound traffic.

imilarly, there is a great deal of congestion on southbound U.S. 101 in the vicinity of Cesar havez Street and the Alemany Boulevard interchange with I-280 several miles north of the outh Bay screenline. South of the interchange, traffic on U.S. 101 tends to be less congested ecause southbound traffic is split between two freeways - U.S. 101 and traffic that merges onto -280. Consequently, a lower v/c is forecast for U.S. 101 at the County line compared to the v/c or southbound I-280 at the screenline.

roject-generated traffic would incrementally worsen these congested conditions, particularly nder Alternative B. "Incident" conditions would also incrementally worsen. An incident ondition results when a traffic accident or vehicle breakdown occurs causing backups and affic delays. An incident condition can substantially affect traffic when it occurs at peak traffic eriods when congested conditions already exist. When an incident occurs on a freeway egment, the incident creates backups on the freeway, restricts the flow rates at the on-ramps, nd causes backups and further congestion on City streets. Incidents on I-80 (and the Bay ridge) are of the most concern with respect to the WLUP. There is a high probability of icidents occurring on the Bay Bridge in the P.M. peak hour resulting in backups and congested onditions on City streets. The San Francisco Department of Parking and Traffic has estimated at on average, P.M. peak hour queues on First Street backing up to Mission Street occur seven eekdays a month, or 33% of the time, due to incident congestion on eastbound I-80 and uthbound U.S. 101. During five out of these seven days, or 25% of the time, queues back up Market Street and extend northward onto Battery Street. Lower average speeds in the vicinity the on ramps would also occur due to congestion on the roadways approaching the on-ramps.

o Project Alternative

ar 2010 trips generated by the Project Area in the No Project Alternative are assumed to be cluded in the "future setting" context and therefore represent a portion of the 2010 MTC recasts for regional travel. Thus, they do not constitute trip growth at the screenlines, over 10 volumes projected by MTC. The amount of vehicular traffic the No Project Alternative would contribute to Bay Bridge volumes in the P.M. peak hour in 2010 is approximately 15 vehicle trips (10 eastbound and 5 westbound). The No Project Alternative is estimated to contribute about 25 year 2010 P.M. peak hour vehicle trips on the Golden Gate Bridge (15 northbound and 10 southbound), about 20 P.M. peak hour vehicle trips on U.S. 101 at the County line (15 southbound, 5 northbound), and about 25 vehicle trips (15 southbound and 10 northbound) on I-280 at the County line in the P.M. peak hour.

Alternatives A and B

The regional traffic analysis for Alternatives A and B is intended to measure changes in volumes at the screenline locations resulting from the various development assumptions of the Alternatives, compared with the volumes generated by the No Project Alternative (the "future setting" context). As stated earlier, net changes in volumes at regional screenlines may occur as a result of development under the WLUP, due to a combination of factors, reiterated in the following discussion. The analysis presented here describes the numbers of vehicle trips at the regional screenlines which represent these changes, in terms of increases over the volumes projected in the No Project Alternative.

By the year 2010, Alternative A would generate about 100 P.M. peak hour vehicle trips more than the No Project Alternative on the Bay Bridge (115 vehicle trips generated by Alternative A, minus 15 vehicle trips generated by the No Project Alternative). About 40 vehicles would be eastbound, and 60 westbound. The v/c ratios on the Bay Bridge would remain essentially the same in both directions. About 35 more vehicle trips would be added northbound on the Golden Gate Bridge, and about 35 vehicle trips southbound, by Alternative A, with nominal effect on v/c ratios (increasing by 0.01 in each direction). Alternative A would also add about 35 more vehicle trips on southbound U.S. 101 at the San Francisco - San Mateo County line, and about 35 more southbound vehicle trips on I-280 at the San Francisco - San Mateo County line. The v/c ratios for southbound travel on both highways would not be affected. Capacity in the northbound direction would continue to be available.

Alternative B would generate approximately 490 more P.M. peak hour vehicle trips than the No Project Alternative on the Bay Bridge in the year 2010. The eastbound/westbound split would be about 260 and 230, respectively. The v/c ratio for the eastbound Bay Bridge would increase from 0.87 to 0.89. Delays to vehicular travel would worsen incrementally both on the bridge and on its approaches, but the project trips themselves would not cause a significant impact at this location. The Golden Gate Bridge would have approximately 160 additional northbound P.M. eak hour vehicle trips generated from this Alternative, increasing the v/c ratio from 0.87 to .89. Southbound project-generated traffic on the Golden Gate Bridge (about 130 P.M. peak our vehicles) would cause the v/c ratio to increase from 0.89 to 0.92, approaching its maximum ractical capacity. Approximately 185 P.M. peak hour vehicle trips would be added to outhbound U.S. 101 by Alternative B, increasing the v/c ratio from 0.70 to 0.72. Southbound I-80 would realize the same number of project-related trips as U.S. 101 (185), with the v/c ratio t the screenline increasing from 0.93 to 0.95, its maximum practical capacity.

his analysis shows that there will still be some reserve capacity at all peak direction screenlines xcept I-280, with additional traffic generated by Alternative B. However, as noted above, the nalysis of future conditions represents a level-of-magnitude order of increases in congestion. aced with the expected future congestion, some discretionary P.M. peak hour trips would likely hift to other transportation modes while others would shift time of travel. Non-work trips can ften be adjusted around the peak hour to avoid congestion; therefore, some non-work trips may art earlier. Changes in travel patterns, such as shifts to ridesharing, could also be anticipated. hifts to transit may occur, and changes in work patterns, such as working less than a 8-hour day d telecommuting, may also occur and thus relieve some congestion.

is likely that the actual numbers of net additional vehicles generated by Alternative B on these cilities would be less than reported here. Net new trips reported in this analysis represent some mbination of factors such as shifts in regional travel, assumptions regarding the types of uses hich might be developed, and some very modest amount of new employment growth beyond at assumed by ABAG/MTC which could result in net new trips disproportionate to net new nployment (largely due to increases in non-commute travel generated by these new jobs). It is t possible to accurately determine: (1) what percentage of the increases in vehicular travel ported for the Alternatives in this analysis represents trips that might have occurred elsewhere San Francisco and, therefore, are in any event already loaded onto the regional system under e ABAG/MTC 2010 projections; (2) what percentage represents shifts in regional travel (either actual location or in direction); and (3) what percentage represents any actual new growth in ps beyond what MTC has projected.

r example, some of the 490 additional vehicle trips estimated to be generated by Alternative B both directions on the Bay Bridge could represent trips that might be already assumed in the TC forecast for 2010 Bay Bridge volumes, but which would have been generated by development that would have occurred somewhere in San Francisco other than the Project Area, or perhaps somewhere else in the region from which drivers would cross the Bay Bridge screenline. Therefore, to some extent, the volumes estimated in Alternatives A and B may represent a higher percentage of the Project Area's contribution to total Bay Bridge volumes relative to the No Project Alternative. Some portion of trips might, however, represent trips generated by a use that could have been assumed in the ABAG/MTC forecasts to develop in, for example, the East Bay, and therefore translates to a shift in geographic location and direction of trips already assumed to occur in the region for the year 2010. In this situation, locations along other regional transportation facilities would experience some reduction in 2010 volumes compared with the MTC projections, roughly equivalent in the aggregate to the increases in travel to and from the Project Area. Another portion of the trips may represent development of a use in San Francisco which, while not making any measurable addition to employment, may generate considerable numbers of non-work trips. It is impossible to determine with any degree of confidence the relative shares of total volumes projected for Alternatives A or B that might represent any one, or combination, of these examples at the various specific screenline locations on the regional facilities reported in this analysis. To be conservative for reporting and analysis purposes, however, all of the net increases in regional vehicular travel generated by Alternatives A and B, over that estimated to be generated by the No Project Alternative, are assumed in this analysis to be "new" and additional to volumes as projected for the facilities by MTC.

Local Traffic Impacts

As described previously, the vehicle trips generated by the project Alternatives were assigned to the street network with the TRAFFIX model. Traffic operations were analyzed at 24 study intersections for the year 2010 for the weekend P.M. peak hour and 15 intersections for the Saturday midday peak hour. Resulting levels of service are presented in Tables 36 and 37, pp. 467 and 468, for the weekday P.M. peak hour and Saturday midday peak hour, respectively, for the three project alternatives. Levels of service are also presented on subarea maps, Figures 49a through 49g (pp. 470-476) for the weekday P.M. peak hour and Figures 50a through 50e (pp. 477-481) for the Saturday midday day peak hour for the three project Alternatives. Existing intersection levels of service are also presented in Tables 36 and 37.

ABLE 36: INTERSECTION LEVELS OF SERVICE, WEEKDAY P.M. PEAK HOUR

	Existing 1993		Cumulative (No Project) 2010		Cumulative + Alternative A 2010		Cumulative + Alternative B 2010	
Intersection	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Bay St. at Van Ness Ave.	10.0	B	11.2	B	11.3	B	11.4	B
2. Bay St. at Columbus Ave.	191.7	F	198.6	F	198.7	F	195.1	F
3. Jefferson St. at Jones St.	3.4	A/a/	13.8	B/c/	13.8	B/c/	13.9	B/c/
4. North Point at Powell St./a/	6.5	B	10.6	C	10.9	C	11.8	C
5. Jefferson St. at Powell St.	9.6	B	13.5	B	13.5	B	13.5	B
6. Embarcadero at Beach St.	--	A/b/	13.6	B/c/	13.6	B/c/	13.6	B/c/
7. Embarcadero at North Point St.	25.8	D	38.4	D	39.8	D	46.6	E
8. Embarcadero at Bay St.	22.6	C	38.8	D	43.3	E	136	F
9. Embarcadero at Sansome St.	21.0	C	30.2	D	31.4	D	57.2	E
0. Embarcadero at Battery/Lombard St.	--	F/b/	24.8	C/c/	25.8	D/c/	33.4	D/c/
1. Embarcadero at Broadway	20.9	C	29.3	D	30.4	D	26.6	D
2. Embarcadero at Washington St.	10.1	B	17.4	C	17.9	C	23.9	C
3. Embarcadero at Mission St.	5.0	A	14.5	B	15.6	C	23.3	C
4. Embarcadero at Folsom St.	11.4	B	16.2	C	17.1	C	39.6	D
5. Embarcadero at Harrison St.	47.3	E	8.1	B	8.3	B	14.7	B
6. Embarcadero at Bryant St.	--	F/b/	24.7	C/c/	31.4	D/c/	72.1	F/c/
7. Embarcadero at Brannan St.	--	F/b/	26.5	D/c/	35.5	D/c/	37.5	D/c/
8. Third St. at King St.	--	F/b/	32.1	D/c/	39.4	D/c/	48.6	E/c/
9. Fourth St. at King St.	--	C/b/	11.6	B/c/	12.2	B/c/	14.0	B/c/
0. Third St. at 16th St.	7.3	B	10.8	B	10.7	B	11.3	B
. Third St. at Mariposa St.	6.3	B	6.6	B	6.6	B	6.6	B
. Third St. at 25th St.	5.7	B	6.4	B	6.7	B	7.2	B
. Third St. at Cesar Chavez (Army) St.	15.7	C	18.2	C	21.8	C	30.5	D
. Third St. at Evans St.	21.3	C	24.2	C	32.7	D	29.9	D

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lay= Delay in seconds/vehicle.
OS = Level of Service.
All-Way STOP sign controlled intersection.
LOS is for minor approach (Lombard, Beach, Bryant, Brannan, and King Streets) only. The major streets (The Embarcadero, Third, and Fourth Streets) do not stop or yield, and were observed to be operating at an acceptable level of service.
Intersections assumed to be signalized in 2010 under all Alternatives.

URCE: Wilbur Smith Associates, May 1995

TABLE 37: INTERSECTION LEVELS OF SERVICE, SATURDAY MIDDAY PEAK HOUR

	Existing 1993		Cumulative (No Project) 2010		Cumulative + Alternative A 2010		Cumulative + Alternative B 2010	
Intersection	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Bay St. at Van Ness Ave.	11.4	B	26.5	D	27.3	D	34.4	D
2. Bay St. at Columbus Ave.	8.4	B	10.5	B	10.7	B	17.3	C
3. Jefferson St. at Jones St.	10.5	C/a/	20.1	C/c/	20.5	C/c/	20.7	C/c/
4. North Point at Powell St./a/	7.4	B	10.1	C	10.5	C	11.6	C
5. Jefferson St. at Powell St.	18.8	C	29.7	D	30.5	D	30.2	D
6. Embarcadero at Beach St.	--	D/b/	16.5	C/c/	16.5	C/c/	16.5	C/c/
7. Embarcadero at North Point St.	20.4	D	14.1	B	14.3	B	15.3	C
8. Embarcadero at Bay St.	18.6	C	18.1	C	18.3	C	97.2	F
9. Embarcadero at Sansome St.	18.4	C	12.8	B	12.9	B	20.6	C
10. Embarcadero at Battery/Lombard St.	--	E/b/	13.5	B/c/	13.9	B/c/	36.7	D/c/
11. Embarcadero at Broadway	32.2	D	13.2	B	14.2	B	25.8	D
12. Embarcadero at Washington St.	6.0	B	16.5	C	18.3	C	39.3	D
15. Embarcadero at Harrison St.	7.5	B	8.7	B	8.8	B	23.6	C
22. Third St. at 25th St.	5.0	A	5.1	B	5.1	B	5.1	B
23. Third St. at Cesar Chavez (Army) St.	15.6	C	19.5	C	21.1	C	28.9	D

Delay = Delay in seconds/vehicle.
LOS = Level of Service.

/a/ All-Way STOP sign controlled intersection.
/b/ LOS is for minor approach (Lombard and Beach Streets) only. The major street (The Embarcadero) doe stop or yield.
/c/ Intersections assumed to be signalized in 2010 under all Alternatives.

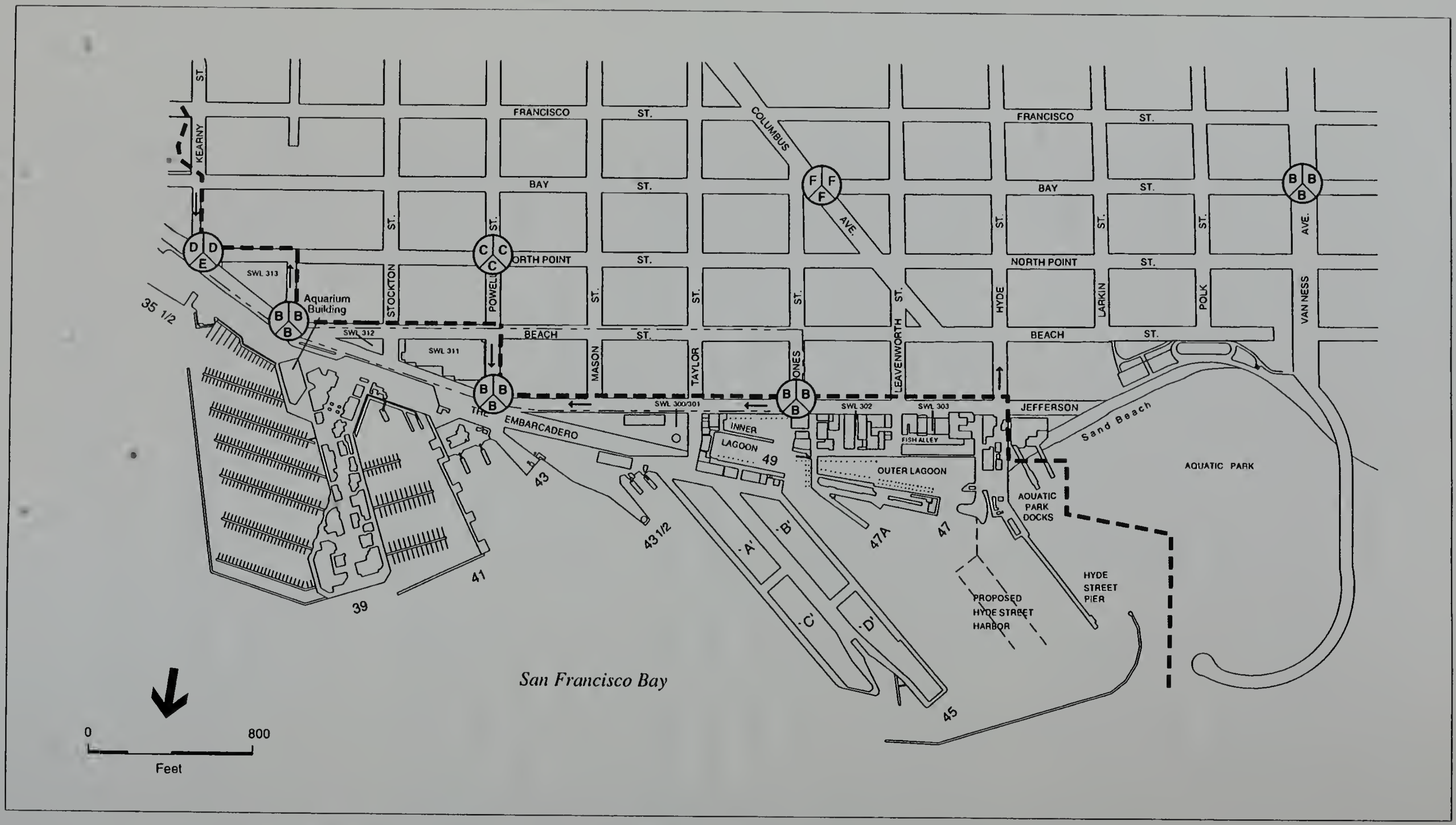
SOURCE: Wilbur Smith Associates, May 1995

Year 2010 levels of service include existing traffic plus cumulative growth. Cumulative growth includes both growth in traffic from elsewhere in the City and the region that would travel through the Project Area, and an amount of traffic growth resulting from development within the Project Area. The No Project Alternative is assumed to reflect the amount of growth in the Project Area that would be expected to occur for the future 2010 cumulative context because its assumed level of Project Area development is consistent with the ABAG/MTC forecasts used for the underlying regional transportation model forecasts. The results for Alternatives A and B given in Tables 36 and 37 represent cumulative traffic plus new Project Area traffic generated under these two Alternatives, presented as the net increase over traffic generated by the No Project Alternative.

In the year 2010, service levels at several intersections would be less congested and some would be more congested under certain alternatives, compared to existing conditions. During the weekday P.M. peak hour for the No Project Alternative and Alternative A, the intersections of The Embarcadero at Battery, Harrison, Bryant and Brannan Streets, along with King at Third and Fourth Streets, would see level of service improvements. Under Alternative B, improved intersection levels of service would be realized at The Embarcadero intersections with Battery and Harrison Streets, as well as the intersection at King and Fourth Streets. Several factors would be responsible for these improved service levels, including The Embarcadero roadway improvements; a higher proportion of trips made by transit as a result of the expanded F-line service and other activities to encourage people to use transportation modes other than the private automobile; signalization at some of the intersections along The Embarcadero, which, in turn, will produce a better traffic flow throughout the network; and better access to and from I-280 ramps. The intersection at Bay and Columbus Streets currently operates at LOS F, and will remain at LOS F in the future for the three project Alternatives. Intersections that would operationally deteriorate during the weekday P.M. peak hour are described below by Alternative.

For the Saturday midday peak hour, all but one study intersection would operate at LOS D or better under Alternative B. As shown in Table 37, p. 468, six intersections throughout the study area would operate at LOS D. The intersection of The Embarcadero at Bay in the northern section of the Northeast Waterfront subarea would operate at LOS F under Alternative B.

(Text continues on p. 482)



- - - — San Francisco Municipal Railway (MUNI) F-Line: An extension of the F-Line from Market Street north to Fisherman's Wharf, featuring the City's historic streetcar collection.

▬ ▬ ▬ Waterfront Land Use Plan Area Boundary

SWL Seawall Lot

Ⓧ No-Project Alternative

Ⓧ Alternative A

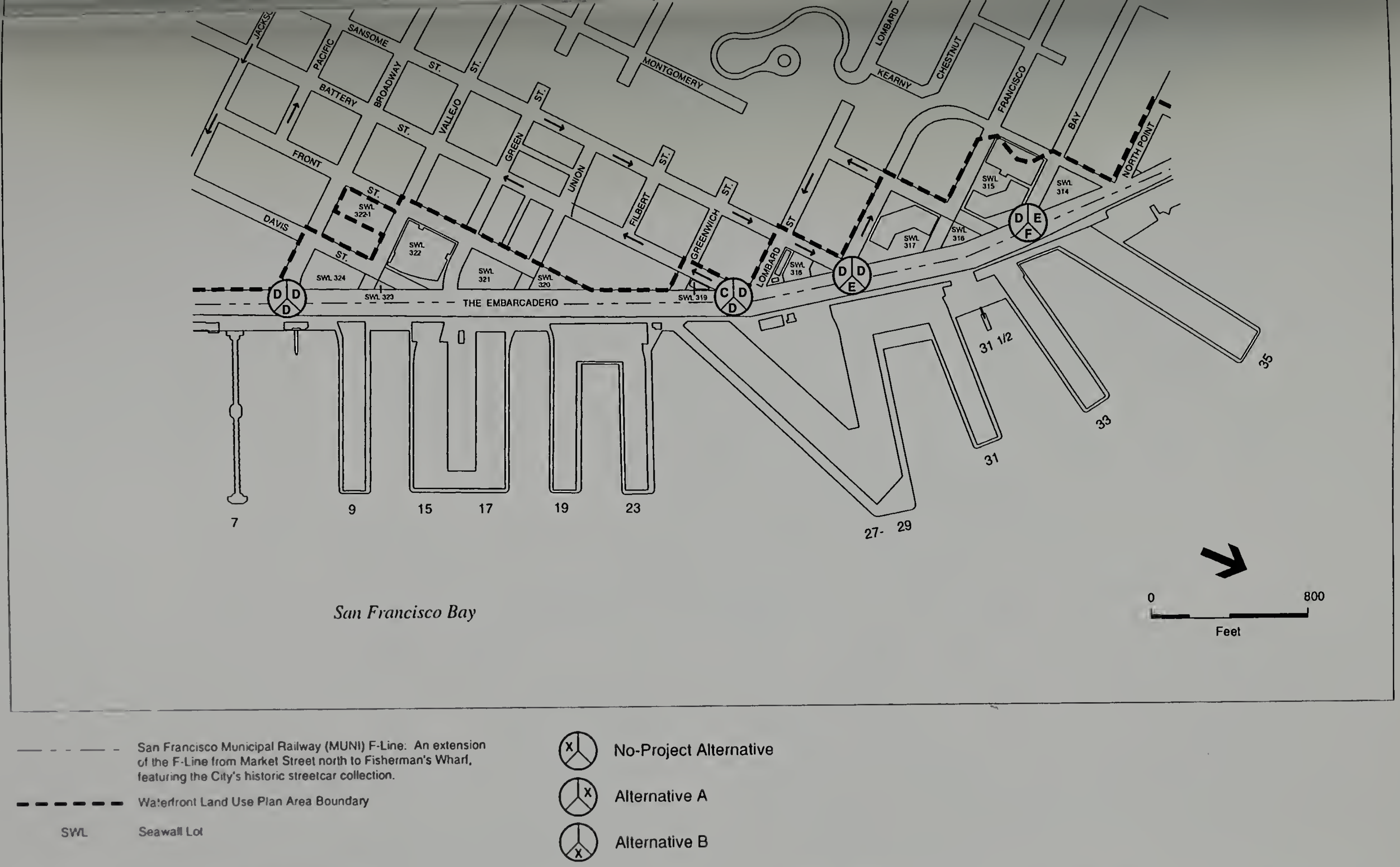
Ⓧ Alternative B

SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and
San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 49a

Future Weekday PM Peak Hour

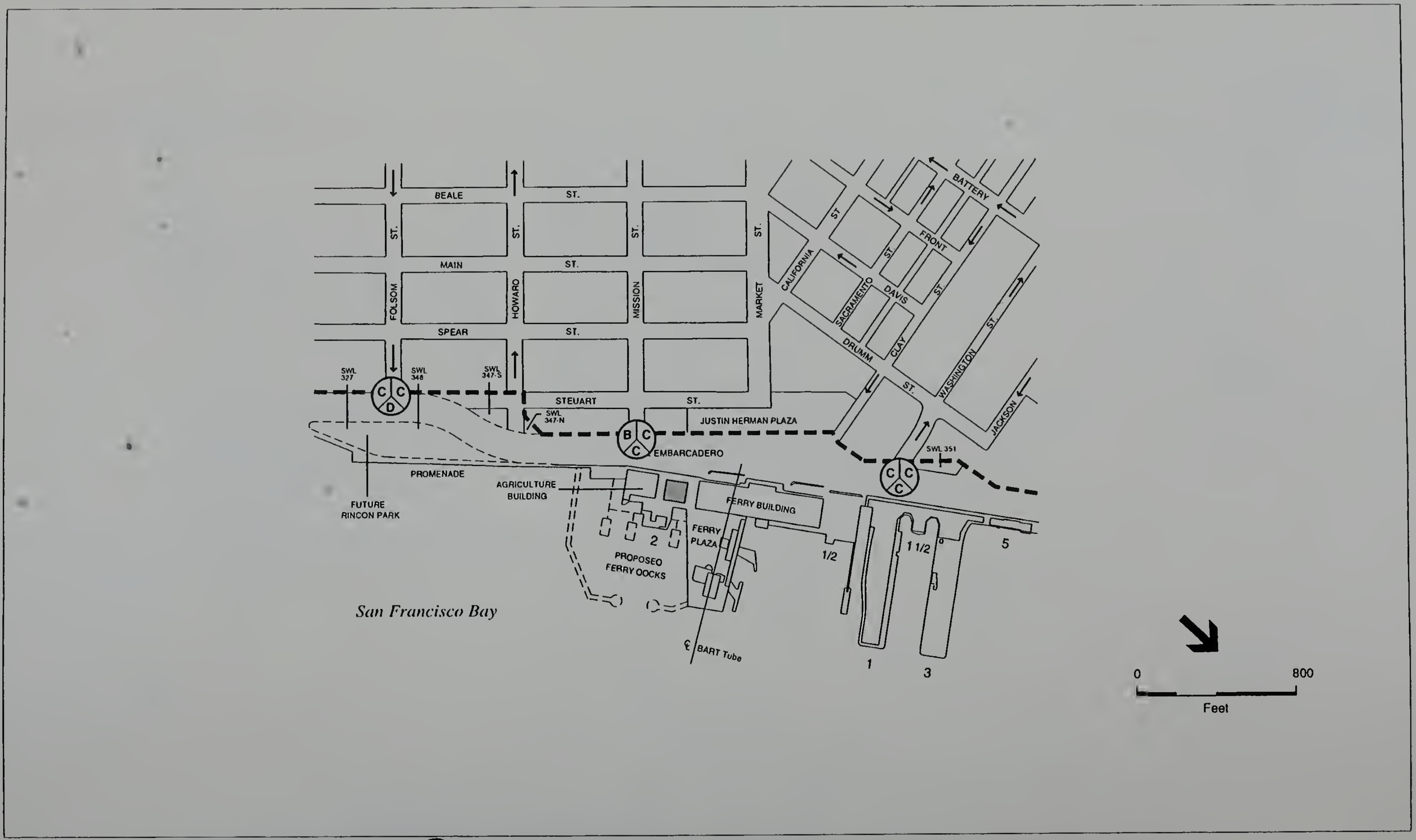


SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 49b

Future Weekday PM Peak Hour
Intersection Levels of Service
Northeast Waterfront Subarea



▬ ▬ ▬ ▬ Waterfront Land Use Plan Area Boundary

SWL Seawall Lot

Ⓧ No-Project Alternative

Ⓧ Alternative A

Ⓧ Alternative B

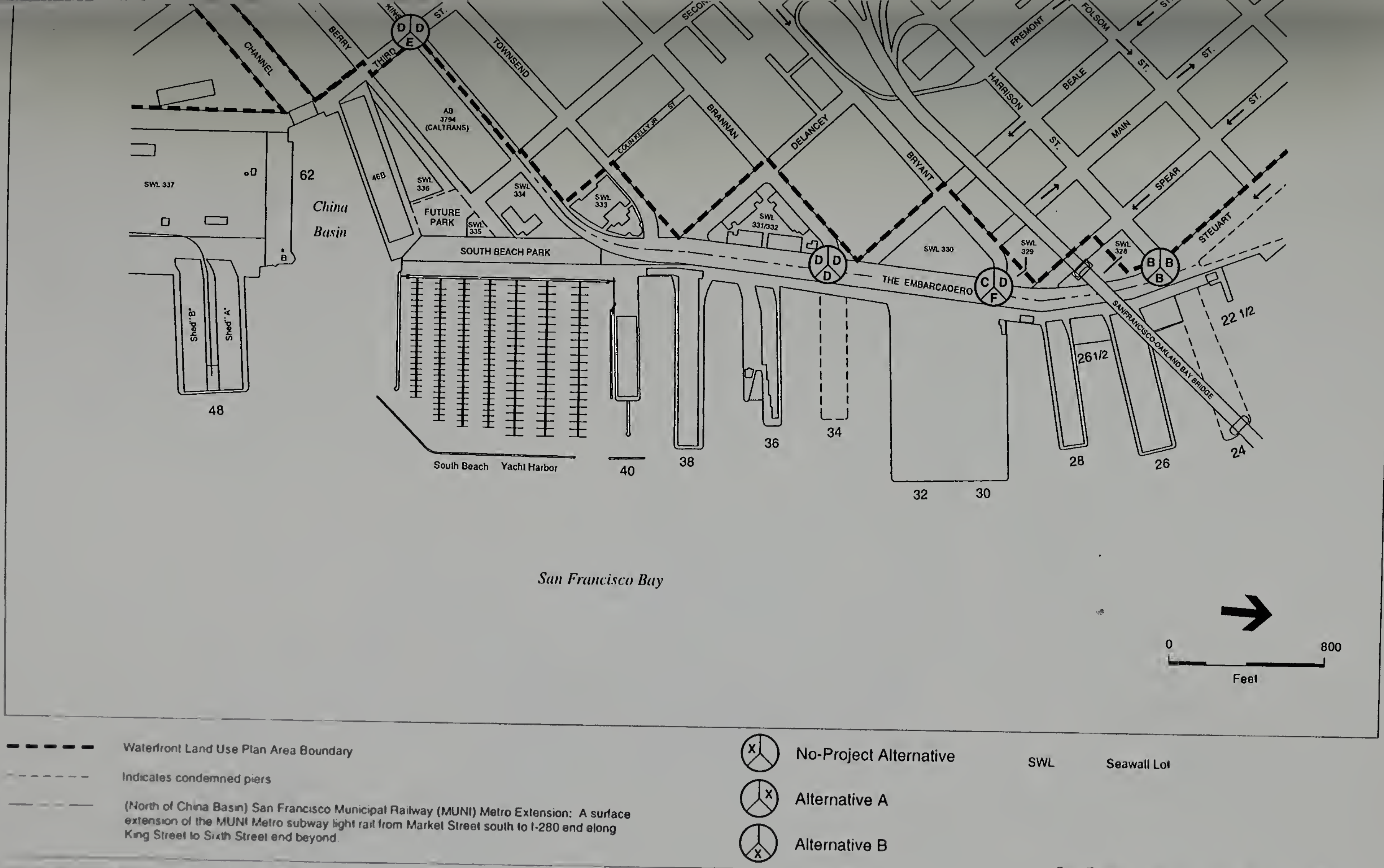
SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 49c

Future Weekday PM Peak Hour

Ferry Building Subarea

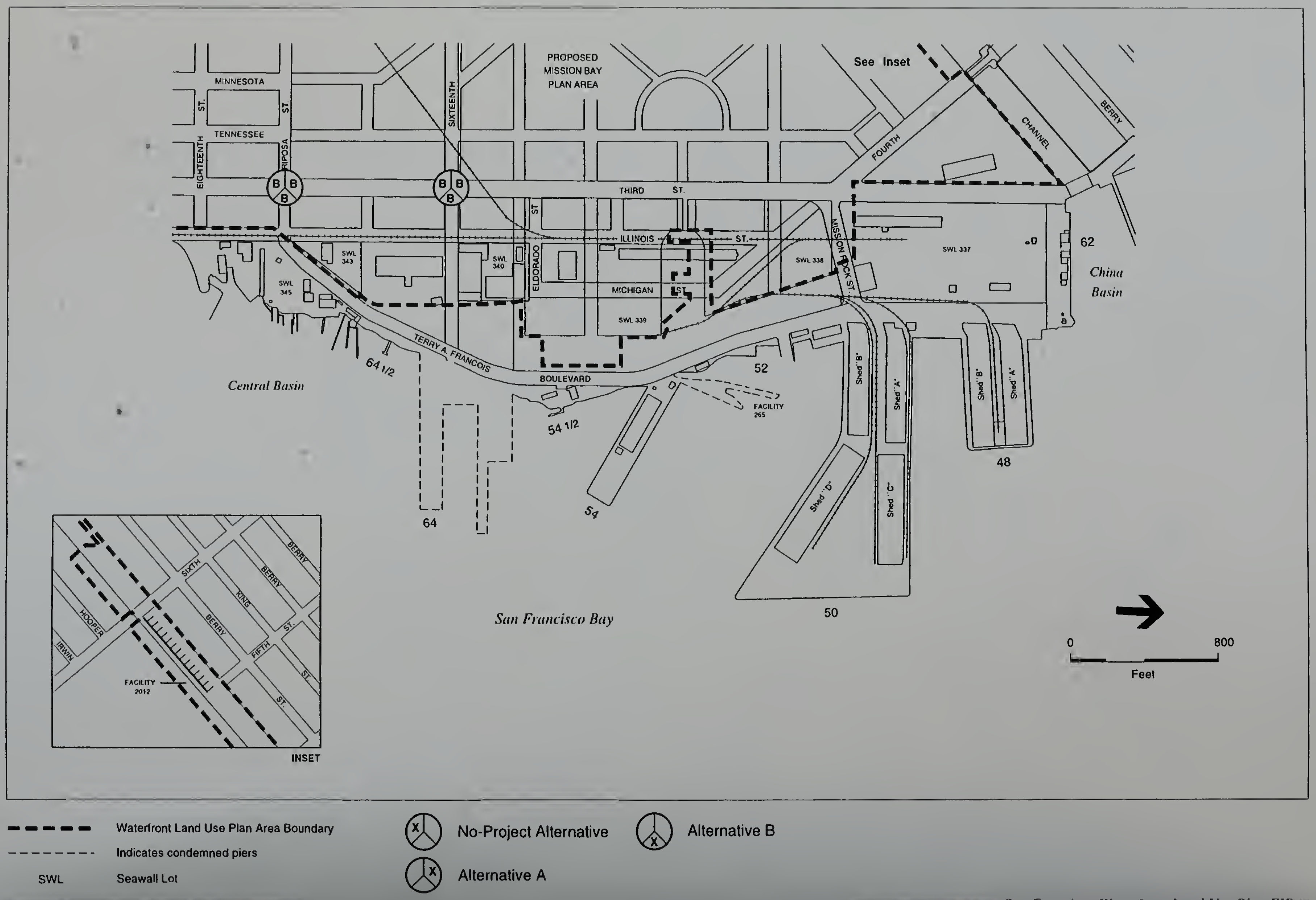


SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 49d

Future Weekday PM Peak Hour Intersection Levels of Service South Beach/China Basin Subarea

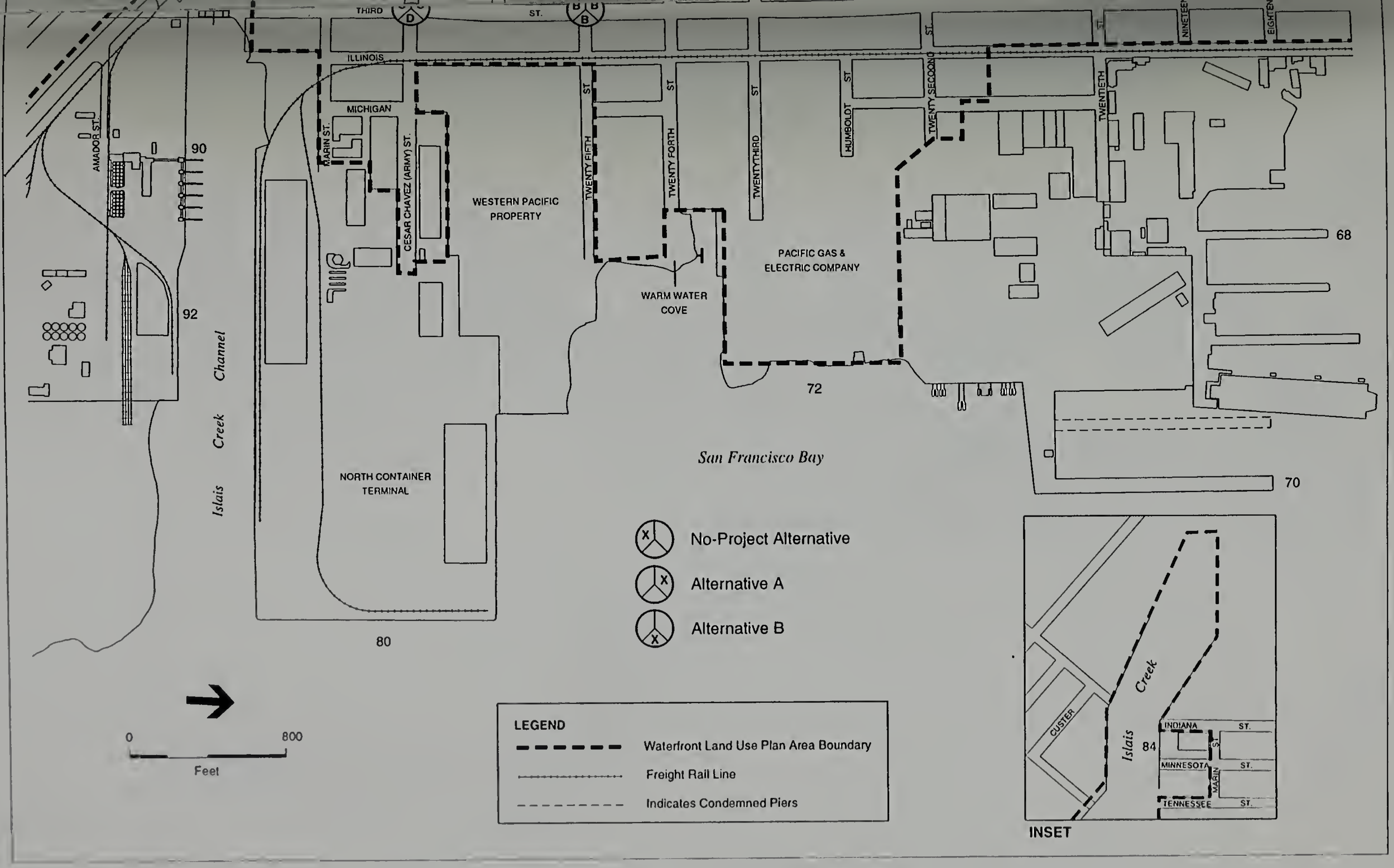


SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 49e

Future Weekday PM Peak Hour Intersection Levels of Service

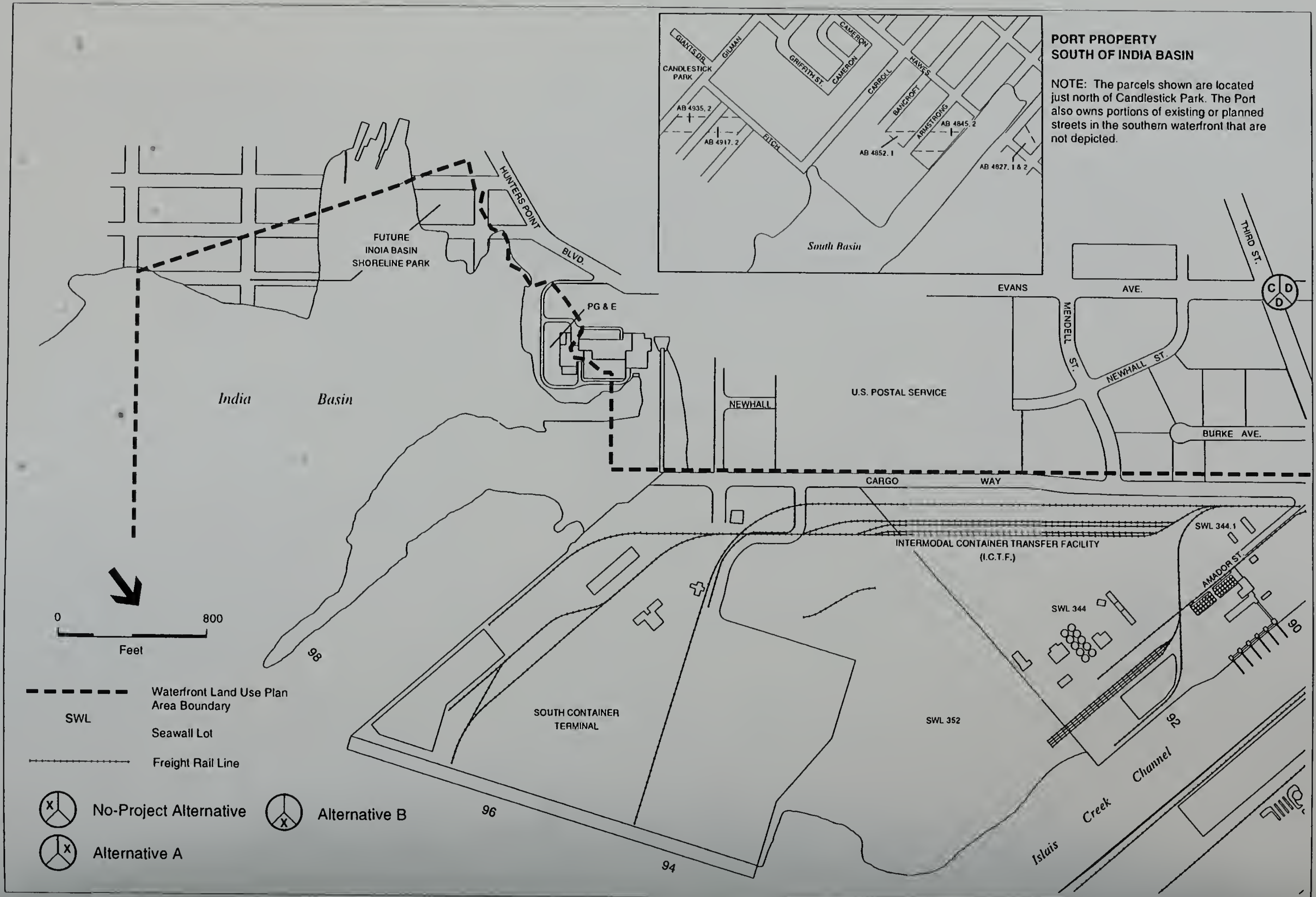


SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 49f

Future Weekday PM Peak Hour Intersection Levels of Service Southern Waterfront Subarea

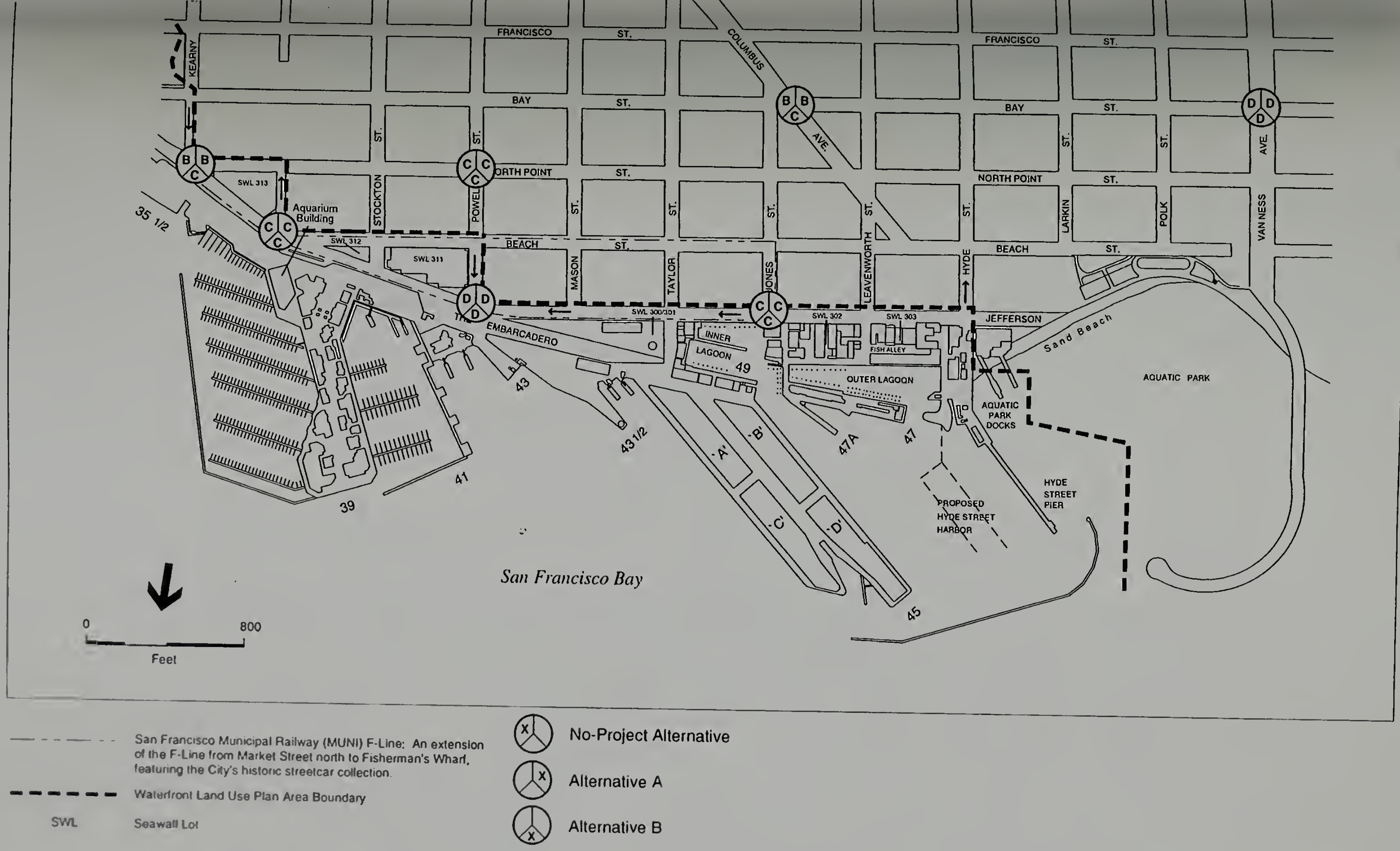


SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 49g

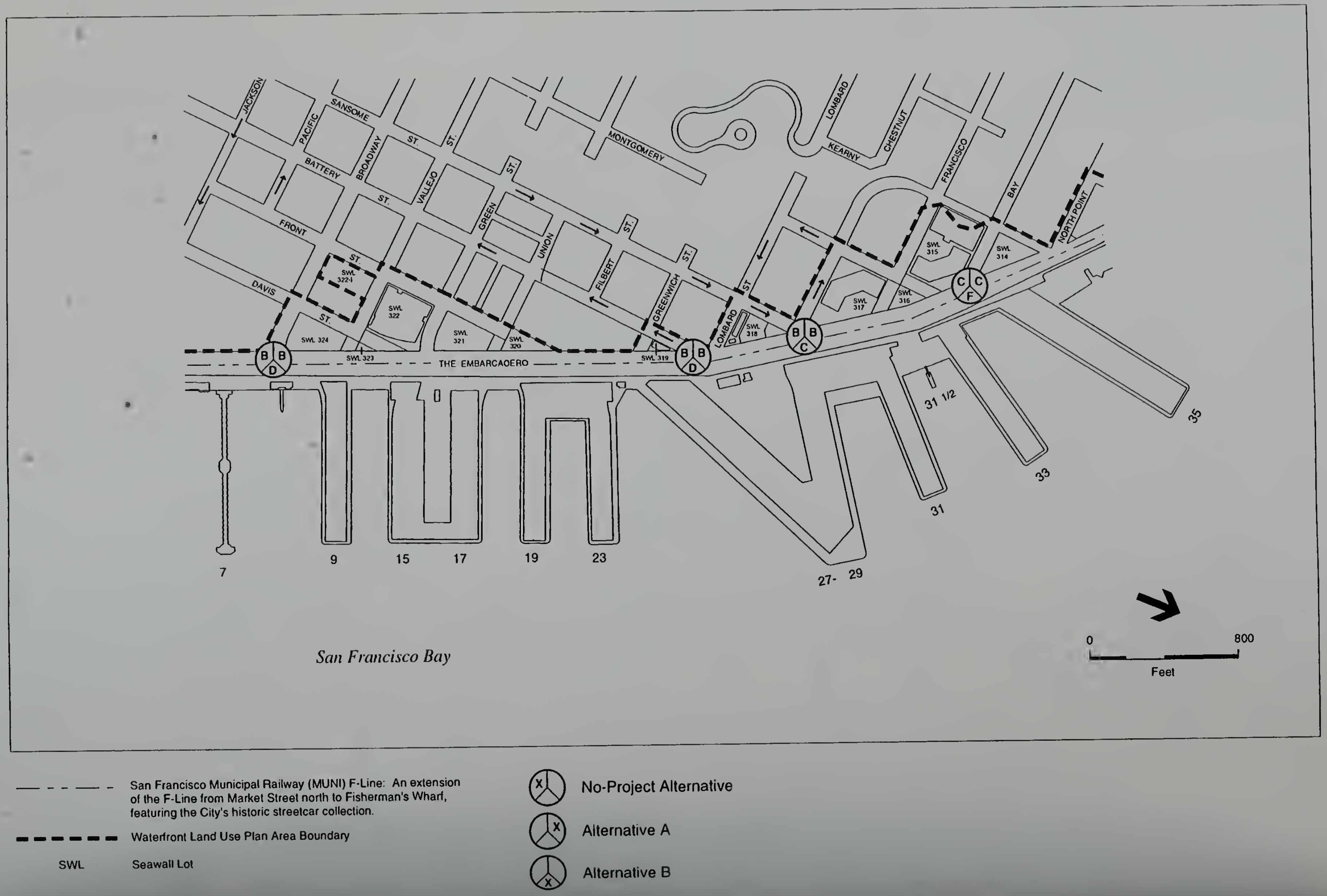
Future Weekday PM Peak Hour



SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 50a
Future Saturday Midday
Intersection Levels of Service
Fisherman's Wharf Subarea

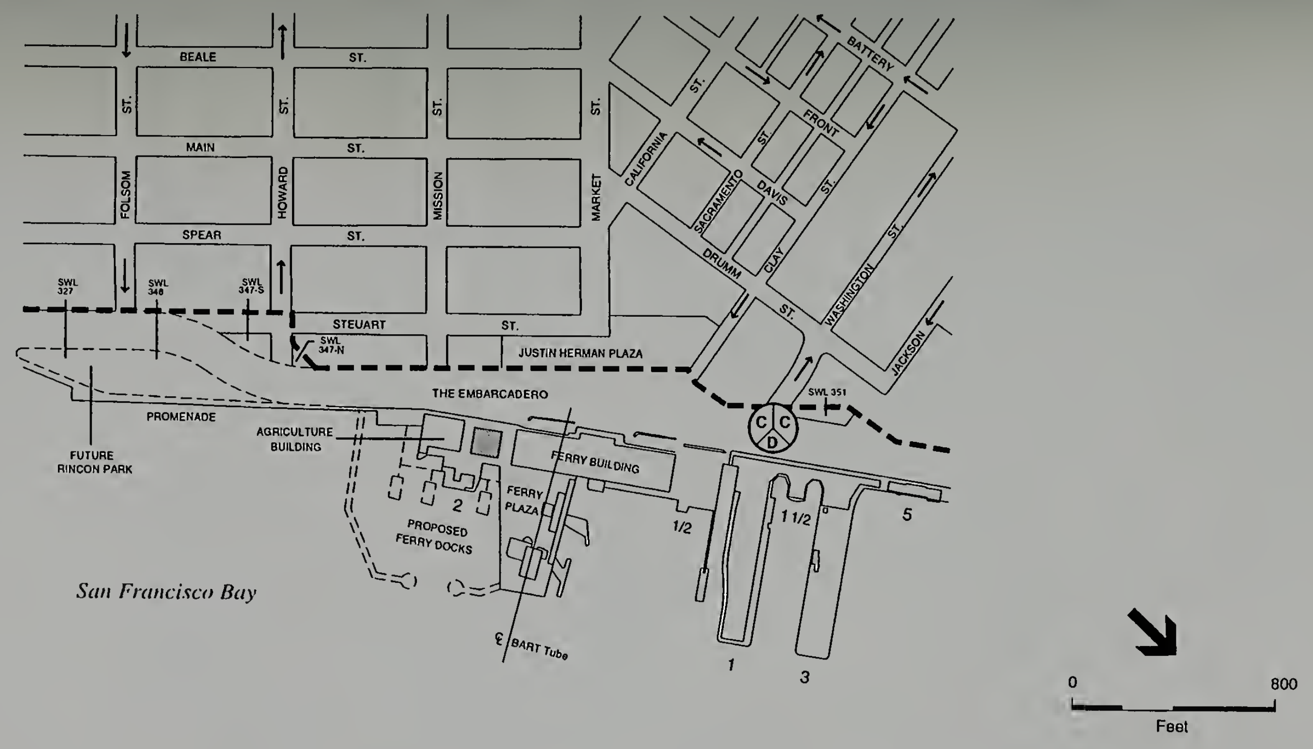


SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and
San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 50b

Intersection Levels of Service



- - - - Waterfront Land Use Plan Area Boundary

SWL Seawall Lot

No-Project Alternative

Alternative A

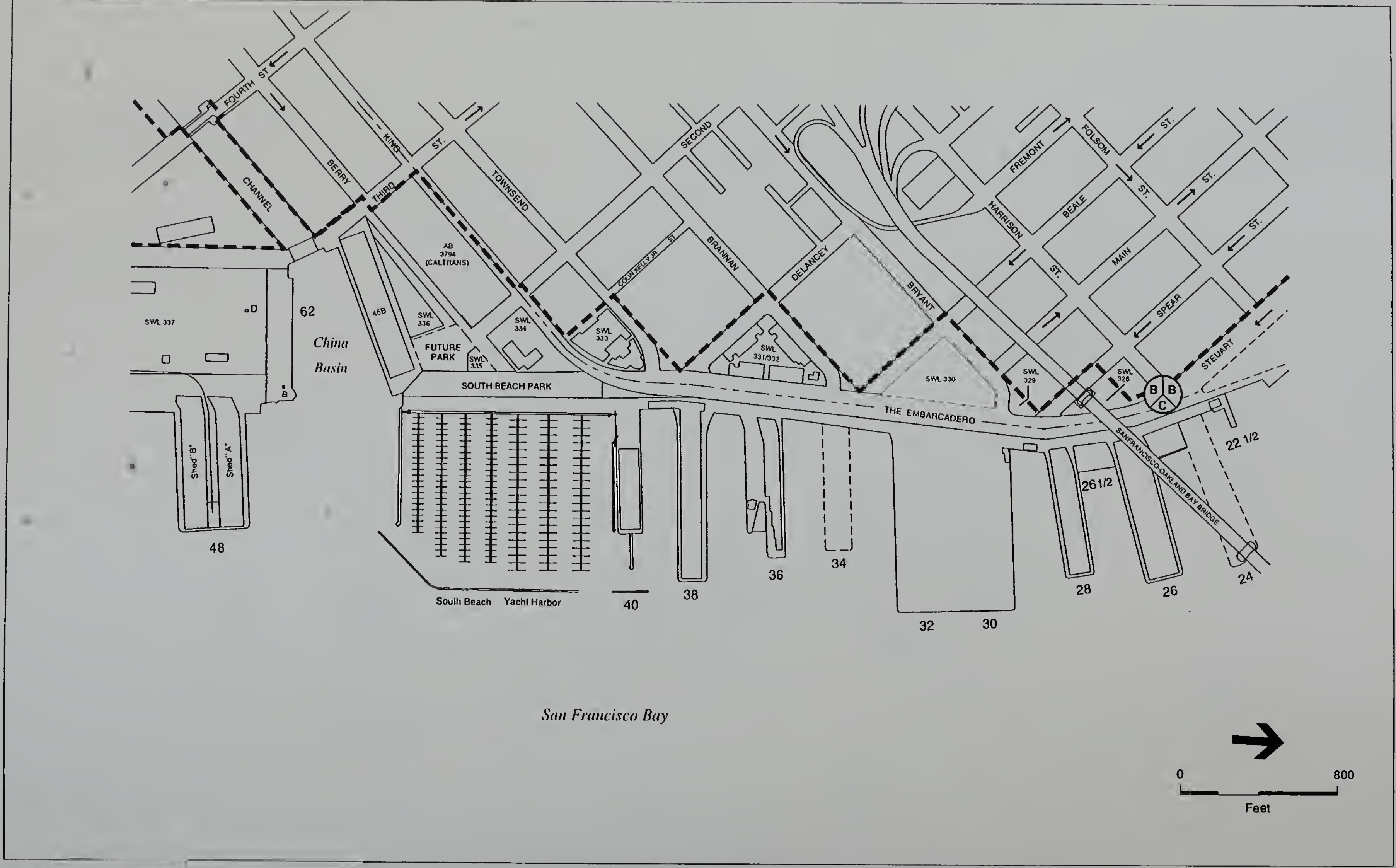
Alternative B

SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 50c

Future Saturday Midday Intersection Levels of Service Ferry Building Subarea



Waterfront Land Use Plan Area Boundary

Indicates condemned piers

(North of China Basin) San Francisco Municipal Railway (MUNI) Metro Extension: A surface extension of the MUNI Metro subway light rail from Market Street south to I-280 and along King Street to Sixth Street and beyond.

No-Project Alternative

Alternative A

Alternative B

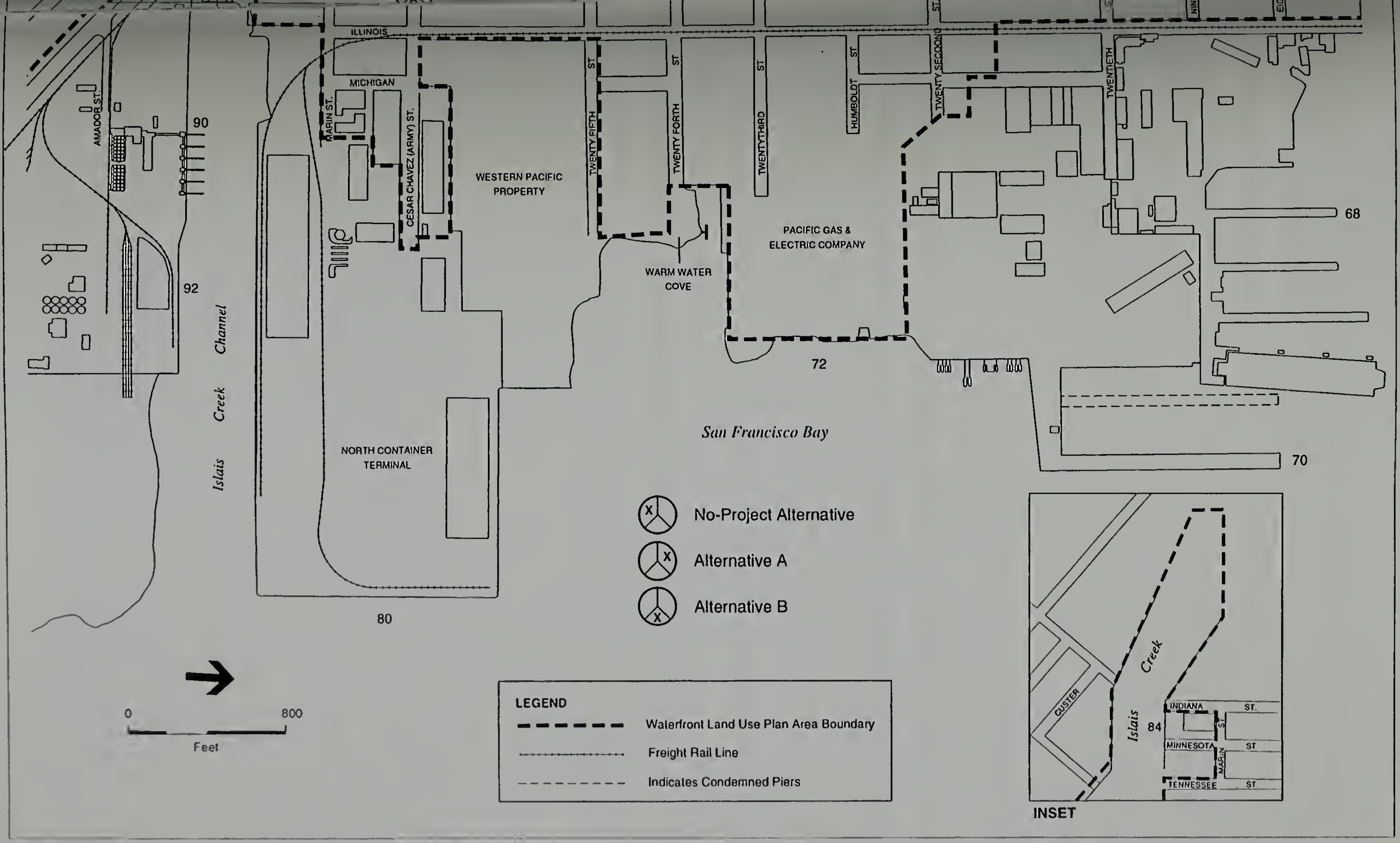
SWL	Seawall Lot

SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 50d

Future Saturday Midday Intersection Levels of Service



SOURCE: SMWM, 1995, Wilbur Smith Associates, 1995, and San Francisco Planning Department, 1996

San Francisco Waterfront Land Use Plan EIR ■

Figure 50e
Future Saturday Midday
Intersection Levels of Service
Southern Waterfront Subarea

For the Saturday midday peak hour, the intersections of The Embarcadero at Beach, North Point, Sansome (except with Alternative B which remains the same as existing levels), and Battery Streets, along with the intersection of The Embarcadero at Broadway (except for Alternative B which remains the same), would have better levels of service in the future than under existing conditions. The weekend improved service levels are attributed to the same changes identified for the weekday P.M. improved service conditions, noted above. Intersections that would operationally deteriorate during the Saturday midday peak hour are described below for each Alternative.

No Project Alternative

During the weekday P.M. peak hour, 23 analyzed intersections would operate at LOS D or better with the No Project Alternative. Six of the 23 intersections would operate at LOS D: The Embarcadero intersections with North Point, Bay, Sansome, Broadway, and Brannan Streets, and the intersection of King and Third Streets. One intersection, Bay Street at Columbus Avenue on the western edge of the Fisherman's Wharf subarea, is currently operating at LOS F and would remain at LOS F under the No Project Alternative.

All analyzed intersections for the Saturday midday peak period would operate at LOS D or better under the No Project Alternative. Intersections operating at LOS D on weekends include Bay Street at Van Ness Avenue and Jefferson Street at Powell Street.

Alternative A

With Alternative A, 22 of the study intersections would operate at LOS D or better for the weekday P.M. peak hour in the year 2010. Eight of these 22 intersections would operate at LOS D, as shown in Table 36, p. 467. As previously discussed, the intersection of Bay Street at Columbus Avenue would remain at LOS F. The weekday P.M. peak hour level of service for the intersection of The Embarcadero at Bay Street in the Northeast Waterfront subarea would deteriorate to LOS E, an unacceptable level of service under Alternative A compared to LOS D under the No Project Alternative and existing LOS C.

During the Saturday midday peak hour, the level of service at all study intersections would be LOS D or better under Alternative A. As with the No Project Alternative, the intersections of Bay Street at Van Ness Avenue and Jefferson at Powell Streets would operate at LOS D, as shown in Table 37, p. 468.

In conclusion, one intersection at The Embarcadero intersection with Bay Street in the northern portion of the Northeast Waterfront subarea would experience significant traffic impacts as a result of implementing Alternative A.

Alternative B

Eighteen of the study intersections under Alternative B would operate at LOS D or better in the year 2010 during the weekday P.M. peak hour. Six of these intersections would operate at LOS D: The Embarcadero at Battery, Broadway, Folsom and Brannan Streets, along with the intersections of Third Street at Cesar Chavez and Evans Streets. Three intersections would drop to LOS E, while two intersections would deteriorate to LOS F. LOS E intersections would include one in the Fisherman's Wharf subarea at the intersection of The Embarcadero with North Point, one in the Northeast Waterfront subarea at The Embarcadero and Sansome Street, and Third and King Streets in the South Beach/China Basin subarea. The Bay Street and Columbus Avenue intersection would continue to operate at LOS F, as at present.

In the Northeast Waterfront subarea, the intersection of The Embarcadero at Bay Street would experience service level deterioration to LOS F. The intersection of The Embarcadero at Bryant Street in the South Beach/China Basin subarea would also deteriorate to LOS F.

In conclusion, under Alternative B five intersections would experience significant traffic impacts during the P.M. peak conditions from WLUP-generated traffic together with cumulative background traffic. The following intersections in the Northeast Waterfront subarea would experience significant traffic impacts: The Embarcadero at North Point, Bay, and Sansome Streets. The South Beach/China Basin subarea would have two intersections with significant mpacts during the P.M. peak hour conditions: The Embarcadero at Bryant Street, and the ntersection at Third and King Streets. For the Saturday midday peak period, the intersection of The Embarcadero at Bay Street in the Northeast Waterfront subarea would experience significant raffic impacts.

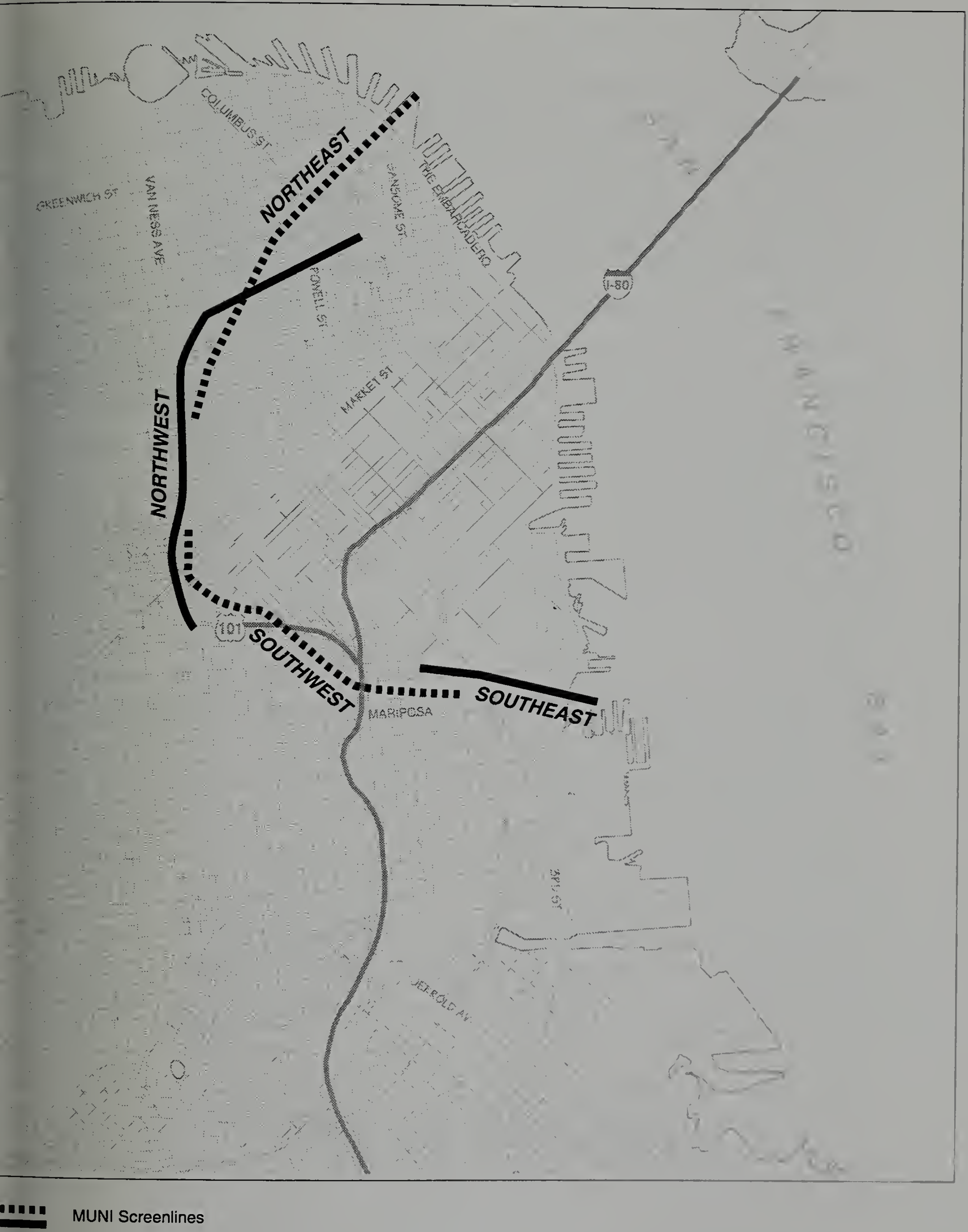
Some shifts in both time of travel and mode of travel might be expected to occur when local ntersection conditions become severely constrained. Discretionary (e.g. recreational or hopping) trips would tend to be most easily adaptable to time of travel changes, and some ortion of those types of trips assumed in this analysis might actually occur earlier or later than he P.M. peak hour. Because 89 percent of all auto trips in the P.M. peak hour on the local street system throughout the Project Area are non-work, it is reasonable to assume that some shift in time of discretionary travel would occur. Travel mode changes might also occur. Non-work trip travel mode changes such as taking transit would reduce the numbers of vehicles during the peak hour. For work trips, changes in mode to ridesharing rather than driving alone, shifts to transit, or walking could occur. Changes in work patterns could also occur that would relieve some congestion, such as working less than an 8-hour day, working longer hours and fewer days per week, and telecommuting.

TRANSIT IMPACTS ANALYSIS

Analysis of transit impacts focuses on the increase in transit patronage in the outbound direction during the P.M. peak hour, generated by the Project Alternatives. Increases are measured at three key regional screenlines (San Francisco Bay for East Bay [transbay] transit travel; the Golden Gate for trips to the North Bay; and the San Francisco-San Mateo County line for trips to the Peninsula), and at four San Francisco Muni screenlines. These screenline locations are shown in Figure 48, p. 449 and in Figure 51.

The East Bay screenline would be served by AC Transit, BART, the Alameda-Oakland Ferry, and the Harbor Bay Maritime ferry service. It is also assumed that ferry service to the East Bay would be substantially increased in year 2010, over the service provided today. Transit along the North Bay (Golden Gate) screenline would be provided by Golden Gate Transit, which provides bus and ferry service to and from Sonoma and Marin Counties to the study area, and the Blue & Gold Fleet ferry service between Pier 1/2 and Tiburon. The South Bay screenline transit services would be provided by SamTrans, BART, and CalTrain.

The screenlines developed for Muni in previous EIRs generally measure radial lines carrying riders from the downtown to other parts of the City, and represent the vast majority of both demand and service on Muni in the peak hours. The City has been divided into four "quadrants" (Northeast, Northwest, Southeast and Southwest) which correspond to the four MTC Superdistricts within San Francisco, as shown in Figure 51. A screenline has been established which measures conditions on the combined Muni lines traveling from the downtown into each of the four quadrants. It should be noted that the points of measurement for the screenlines do not actually follow the alignments schematically shown on Figure 51. Rather, the screenlines reflect the actual Maximum Load Point for each Muni line crossing a screenline, which may



Mission Bay Environmental Impact Report. 1988

Figure 51
Muni Transit Screenlines

occur for individual lines at some point on either side of the schematic lines drawn for graphic representation. Although these screenlines were developed primarily for analysis of impacts to Muni resulting from development in the greater downtown, they are relevant for analysis of impacts to Muni resulting from WLUP development as well, despite the fact that they do not generally conform to the Project Area geographic boundaries. For example, trips made on Muni from the northern portion of the Project Area to the Southeast sector of San Francisco would pass through the downtown and therefore through the Southeast screenline, and trips made by much of the Project Area to the Northeast or Northwest sectors of the City would either travel directly from the downtown area or make connections to lines serving those sectors within the downtown area, and therefore cross the appropriate screenlines. The Muni trips measured at the four San Francisco screenlines represent both travel from the Project Area to other parts of the City, and travel from various parts of the City into the Project Area. While this includes trips both inbound to the Project Area as well as outbound from the Project Area, for the purpose of measuring impacts, the trips are measured at the screenlines in the direction of outbound from the downtown, the peak direction of travel and patronage loads for the Muni system.

In addition to increases in transit travel across screenlines in the outbound peak direction, the EIR Alternatives would generate new transit travel which is internal to the Project Area itself or adjacent areas short of screenline locations. In most cases, these trips would be of short distance and multi-directional. Some of these trips would be made for travelers to connect with regional transit carriers such as BART or CalTrain. Some may cross a screenline in the peak direction, although the number of "internal" transit trips which would or would not cross a screenline cannot be accurately determined. They would have the greatest impact on the Muni lines specific to the Project Area itself (such as the F-Line, the MMX [Muni Metro extension south of Embarcadero Station], the 15-Third, and other specific lines serving the narrow Project Area corridor) rather than the entire grouping of individual lines included for a given screenline measurement.

Outbound transit ridership projections by EIR Alternative for the weekday P.M. and Saturday midday peak hours are presented in Table 38. These numbers represent growth in the peak direction of transit travel demand generated by the three EIR Alternatives, relative to existing conditions. The table demonstrates that the No Project Alternative and Alternative A would generate very modest numbers of net new outbound transit trips, no more than 125 across any single screenline during a weekday P.M. peak hour, and no more than 170 on a Saturday midday

TABLE 38: PROJECT-GENERATED OUTBOUND TRANSIT TRIPS, 2010

Alternative	Northeast Corridor	Northwest Corridor	Southeast Corridor	Southwest Corridor	East Bay	North Bay	South Bay
Weekday P.M. Peak Hour							
No Project	30	40	20	20	35	20	25
Alternative A	100	70	125	50	75	30	50
Alternative B	470	500	890	200	400	80	200
Saturday Peak Hour							
No Project	40	40	10	20	30	15	20
Alternative A	120	110	170	50	85	35	55
Alternative B	1,035	545	1,500	230	400	75	190

NOTE: All numbers have been rounded.

SOURCE: Wilbur Smith Associates, August 1995, and San Francisco Planning Department, December 1995

peak hour. Since the screenlines represent an aggregation of lines and, in some cases, multiple operators, these modest numbers would not represent any substantial impact, and are therefore not analyzed in any further detail. Table 38 also shows that Alternative B would generate ubstantial numbers of net new outbound transit trips, both in the weekday P.M. peak hour and he Saturday midday peak hour. Increases in demand would be greatest from the downtown area cross the Muni screenlines to the four quadrants of San Francisco, followed by additional emand generated to the East Bay. Net new transit trip demand to the North Bay and the South Bay would be relatively modest and, since they would travel on multiple operators through each corridor, would not have any substantial impact to an individual transit operator. However, ecause BART is the major carrier of transit patrons between San Francisco and both the East ay and South Bay, potential impacts to BART are analyzed further.

Table 39 shows existing and future year 2010 estimates for transit passenger demand loads, capacities, demand-to-capacity ratios, and levels of service for the weekday P.M. peak hour, at each of the screenlines, by EIR Alternative. While for highways a v/c ratio of 1.0 represents a facility is operating at full capacity, the capacity used in the calculation for transit service represents only seating capacity. Since nearly all transit operators have a policy of allowing a certain percentage of standees in buses and rail cars, a v/c ratio in excess of 1.0 is the actual acceptable capacity. The actual ratio varies by operator and type of equipment but is generally between 1.15 and 1.35. This would be the point at which an operator would need to add vehicles to accommodate demand to avoid excessive crowding.

It should be noted that, while figures for Muni represent scheduled capacity (existing and projected), Muni has not been able to realize scheduled seating capacity in actual service delivery, mainly because of a lack of operating funds, understaffing, and equipment problems. Actual capacity delivered by Muni across the screenlines can be estimated, based on a one-day sample study performed in 1993. This study showed that actual capacity fell short of scheduled capacity by about 13 percent overall, but in varying degrees by screenline. Although estimates for screenline capacity in the year 2010 are shown as anticipated scheduled capacity, there is no guarantee that Muni will be able to provide this level of service any better than it can at present. Therefore, actual load factors (demand/capacity) and levels of service are worse for the existing situation than shown in Table 39 and could also be worse in the year 2010, by a similar or lesser degree.

No Project Alternative

Muni levels of service, based on projections for scheduled seating capacity, would be generally acceptable at C or D at the four screenlines. If Muni fell short of delivery of seating capacity in the year 2010 by about the same percentages by screenline as occurred in 1993, the level of service would be D for each of the four screenlines.

About 190 total net new local and regional weekday P.M. peak hour transit trips in the outbound direction are estimated to be generated in the year 2010 by the No Project Alternative, as shown in Table 38, p. 487. Fewer than 50 net new trips would be generated across any individual screenline. These increases by screenline are assumed to be included in the base 2010 demand figures shown in Table 39.

TABLE 39: WEEKDAY P.M. PEAK HOUR OUTBOUND TRANSIT DEMAND AND CAPACITY AT SCREENLINES

		Existing 1994				Year 2010/a/			
Screenline	Operator	Demand /b,c/	Capacity /d/	Demand/ Capacity	Level of Service/e/	Demand	Capacity	Demand/ Capacity	Level of Service
SF Northeast	Muni	4,800	5,400	0.89	C	5,600	5,700	0.98	C
No Project						30/f/		0.98	C
Alternative A						+70/g/		0.99	C/D
Alternative B						+440		1.06	D
SF Northwest	Muni	6,300	6,700	0.94	C	7,000	6,700	1.04	D
No Project						40		1.04	D
Alternative A						+30		1.05	D
Alternative B						+460		1.11	D
SF Southeast	Muni	4,600	5,800	0.79	C	5,200	5,900	0.88	C
No Project						20		0.88	C
Alternative A						+105		0.90	C
Alternative B						+870		1.03	D
SF Southwest	Muni	8,700	8,500	1.02	D	9,500	9,200	1.03	D
No Project						20		1.03	D
Alternative A						+30		1.04	D
Alternative B						+180		1.05	D
East Bay/h/	BART	14,600	13,000	1.12	C	20,700	17,500	1.18	C
No Project						25		1.18	C
Alternative A						+25		1.18	C
Alternative B						+255		1.20	C
South Bay/h/	BART	7,600	8,600	0.88	B	12,730	12,250	1.04	C
No Project						20		1.04	C
Alternative A						+15		1.04	C
Alternative B						+115		1.05	C

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a/ Year 2010 demand data (assumed to reflect the No Project Alternative conditions) were developed applying growth factors used for the WLUP to existing demand. The net addition of project-generated transit trips for Alternatives A and B, over those generated by the No Project Alternative, were added to the year 2010 estimated demand. Capacity enhancements as reflected in the Muni Short Range Transit Plan, October 15, 1995 were added to existing capacity to reflect 2010 conditions. All volumes have been rounded.

b/ Muni numbers are from Downtown Plan Monitoring Report, Planning Department City and County of San Francisco, 1994.

c/ Existing BART demand and capacity data were provided by Dean Leonard, BART Operations, 11/27/95.

d/ Muni numbers presented reflect scheduled seating capacity. Muni has been unable, for a variety of reasons, to actually provide scheduled capacity. Therefore the Demand/Capacity ratios, and the Levels of Service, shown in this table are different than may actually be experienced by Muni patrons. Refer to text for descriptions of how conditions differ when accounting for the inability of the operator to achieve scheduled capacity.

e/ Level of Service presented is as determined from the demand/capacity ratio using the Highway Capacity Manual, Special Report 209, Table 12-5 for Muni (bus transit) and Table 12-6 for BART (urban rail transit), 1985.

f/ The transit trips shown for the No Project Alternative are assumed to be included in the year 2010 volumes shown.

g/ The transit trip numbers shown for both Alternatives A and B reflect the potential net increase over the volumes shown for 2010, and are the difference between the gross number of transit trips generated by either Alternative A or Alternative B as assigned to the screenlines, and the transit trips assigned to the screenline for the No Project Alternative.

/ BART is the only operator analyzed for the transit screenlines because, as discussed in the text, the numbers of additional riders on other regional systems, for all three Project Alternatives, would be nominal and would not be statistically measurable against daily fluctuations. BART future demand is based on preliminary patronage projections provided by Pam Herhold, BART staff, March 27, 1996. Capacity is based on number of seats.

OURCE: San Francisco Planning Department, December 1995

Alternative A

Under Alternative A, the total number of estimated net new transit trips in the outbound direction during the P.M. peak hour, for all operators and across all screenline locations, is approximately 500, or about 310 more than the No Project Alternative. The number of net additional transit trips across any individual screenline, over the volumes assumed for the No Project Alternative, are nominal. The Muni Southeast screenline would show the greatest increase, but only by 105 additional trips. These numbers would tend to be within the parameters of daily fluctuations in transit patronage. Levels of service on the four Muni screenlines would be essentially the same as in the No Project Alternative, both for estimated scheduled seating capacity and estimated actual capacity provided. The exception would be the Muni Northeast screenline, which, with the 70 additional trips added by Alternative A, would approach the cusp between LOS C and D.

Alternative A could generate about 200 transit trips internal to the Project Area during the P.M. peak hour. These trips would tend to be short distance in nature, in varying directions, and concentrated within the very narrow boundaries of the Project Area corridor including the area from the Ferry Building subarea north. They would use primarily the Muni transit services concentrated along The Embarcadero, and thus would have the greatest impact on the Muni F-Line. These 200 internal trips would be in addition to any trips which would occur on the F-Line that are already measured on the Northeast screenline. Although it is not possible to accurately estimate direction of travel, if it is assumed that they are equally split between northbound and southbound, about 100 seats would be needed in each direction to accommodate these trips, the equivalent of about 1.5 F-line vehicles (using a factor of 60 seats per historic car) in each direction.

Muni's 1995-2005 *Short Range Transit Plan* projects a total of 12 PCC vehicles operating during the two-hour peak period on the F-Line between Castro Street and Fisherman's Wharf by 2000. This would translate to about 7.2 vehicles during the P.M. peak hour. No increase in capacity is assumed between 2000 and 2010. Assuming that the PCC vehicles would be evenly split in direction of travel, P.M. peak hour seating capacity would be about 215 in each direction. It is also assumed that background demand on the F-Line would be more than 50 percent of seating capacity. Therefore, with additional demand generated by Alternative A there could be overcrowding (standees) on the F-Line during the P.M. peak hour.

Alternative B

Comparing the data in Table 38, p. 487, Alternative B would generate the most net new outbound transit trips of the three EIR Alternatives. Approximately 2,750 weekday P.M. peak hour transit trips and about 3,975 Saturday midday peak hour transit trips in the outbound direction are projected with the development assumed in Alternative B. This would be an increase over demand estimated for the "future setting" context (the No Project Alternative) of 2,560 during the weekday P.M. peak hour, and 3,800 in a Saturday midday peak hour.

Alternative B is estimated to generate less than 100 net new trips across the Golden Gate screenline for both a weekday P.M. peak hour and a Saturday midday peak hour (an increase over the No Project Alternative of 60 in both the weekday P.M. and Saturday midday peak hours), split among Golden Gate Transit buses and ferries, Blue & Gold Fleet ferries, and new ferry services. Thus, there would be negligible and statistically unmeasurable impacts to any individual operator to the North Bay.

Alternative B is estimated to generate approximately 200 net new P.M. peak hour trips and 190 net new Saturday midday peak hour trips to the South Bay (an increase of 175 and 170, respectively, over demand assumed for the No Project Alternative), which would be split among BART, SamTrans and CalTrain. If it is assumed that BART would carry about two-thirds of these new trips (about 115), a percentage similar to existing conditions, Table 39, p. 489, shows that there would be no substantial impact to BART's level of service in the weekday P.M. peak hour with these new trips. On a Saturday, BART operates fewer trains and therefore has less capacity, but loads are also far less, with excess seating capacity. Therefore, an additional 115 trips on a Saturday midday peak hour would not have a major impact to the operator. The remaining trips would have a negligible effect on SamTrans and CalTrain.

Alternative B is estimated to generate about 400 net new outbound P.M. peak hour transit trips to he East Bay screenline, for both weekday P.M. peak hour and Saturday midday peak hour. This would be an increase of 365 and 370, respectively, over demand assumed for the No Project Alternative ("future setting" context). These trips would be divided among BART, AC Transit, and various ferry services. In the base year (1993), BART carried about 75 percent of East Bay transit trips, at a time when minimal ferry services were available. With additional ferry services ssumed for year 2010, the percentage of total East Bay transit trips which BART might reasonably be expected to carry would still not be less than 70 percent, translating to about

255 net new trips generated by the Waterfront Plan's Alternative B. This would increase the weekday P.M. peak hour demand-to-capacity ratio for BART very slightly but with no change to the level of service. According to BART staff, there would be enough capacity on a Saturday afternoon to accommodate the additional 255 trips without a significant impact to the operator (e.g., deterioration of the level of service to E or F). Effects on AC Transit and Ferries would be minimal.

Outbound transit travel across the San Francisco (Muni) Southwest screenline would increase by about 180 more trips in the P.M. peak hour compared with the No Project Alternative, with no impact to the level of service at this screenline location. Travel through the Northwest screenline would increase by about 460 trips in the P.M. peak hour compared with the No Project Alternative, which would increase the demand-to-capacity ratio but would not have any effect on the level of service for the screenline. Compared with the demand associated with the No Project Alternative, Alternative B would generate about 870 more P.M. peak hour outbound trips across the Southeast screenline, and travel across the Northeast screenline would increase by about 440 trips in the P.M. peak hour. Based on estimated scheduled seating capacity, the level of service would degrade at each of these two screenline locations (Southeast and Northeast), from C to D. This is still an acceptable level of service and well within Muni's standard before it determines additional vehicles are required. If Muni was only able to provide seating capacity in an amount relative to the shortfalls estimated for 1993 by corridor, then levels of service with the additional demand generated by Alternative B would be D at all screenline locations except the Northwest screenline, which would deteriorate to LOS E.

Alternative B could generate about 900 transit trips internal to the Project Area (not crossing screenlines as movement from one sector of the City to another and, therefore, not included in the outbound transit trip totals given above and in Tables 38 and 39, pp. 487 and 489) during the P.M. peak hour. These trips would tend to be short distance in nature, in varying directions, and concentrated within the narrow boundaries of the Project Area corridor, especially the area from the Ferry Building subarea north. They would use primarily the Muni transit services concentrated along The Embarcadero, and thus would have the greatest impact on the Muni F-Line. The greatest concentration of these trips (about 500) would be in the Northeast Waterfront subarea. Perhaps as many as 250 additional trips could be generated within the Fisherman's Wharf and Ferry Building subareas. About half of these would be transit connections to and from major regional transit carriers (BART, AC, ferries). These internal trips would be in addition to any trips which would occur on the F-Line that are already measured on the Northeast screenline.

lthough it is not possible to accurately estimate direction of travel, if it is assumed that they are qually split between northbound and southbound, about 400 seats would be needed in each irection to accommodate these internal trips. In terms of seating alone, this would be an quivalent to approximately 6.5 F-line vehicles (using the 60 seats per vehicle standard seating ctor). Muni's 1995-2005 *Short Range Transit Plan* projects a total of 12 PCC vehicles perating during the two-hour peak period on the F-Line between Castro Street and Fisherman's harf by 2000. This would translate to about 7.2 vehicles during the P.M. peak hour. No crease in capacity is assumed between 2000 and 2010. Assuming that the number of vehicles ould be evenly split in direction of travel, P.M. peak hour seating capacity would be about 215 each direction. The Project-generated demand would be double the projected seating capacity f the F-Line. In addition to project-generated demand, there would be demand on the F-Line om existing 32-Embarcadero patronage and cumulative growth. Additional transit vehicles ould be required in the Embarcadero corridor north of the Ferry Building to meet combined umulative and Project demand although, since it is not possible at this point to project a easonably accurate level of cumulative demand for only the F-Line, the number of additional ehicles that may be required cannot be estimated. Muni has a total of 32 vehicles in its ombined PCC car - Historic Streetcar fleet, which is dedicated to the F-Line. The fleet is nearly qually divided between the two types of vehicles. Because there would be a reserve of only 5 CC cars, and because most of the historic vehicles are on loan and require a great deal of care d maintenance, Muni may not have additional light rail vehicles to deploy along the line, even s a shuttle service just along The Embarcadero. Additional rail transit vehicles on the line could ave an impact on traffic operations and level of service. Muni may instead need to reinstate 32-mbarcadero bus service, although equipment availability and operating costs are not assured.

he Regional Traffic Impacts section includes a discussion of how trips may be overestimated in is analysis (refer to p. 459). The same rationale pertains to transit impacts as well. Therefore, e impacts to Muni at the four screenline locations could be less than those described above.

der Alternative B, projected travel demand on Muni in the outbound direction on a Saturday idday peak hour would be considerably greater than during the weekday P.M. peak hour, as own in Table 38, p. 487. This is primarily due to Assembly/Entertainment/Recreation uses nerating more visitor travel during the weekend midday than during the weekday P.M. peak ur. Based on published schedules, Muni capacity is far less during the weekend than in mmute peak periods. Muni data indicates that typical patronage demand on a weekend ernoon for many lines is also far less than the service capacity provided for these lines.

Although many lines on a weekend afternoon experience a Level of Service "C" or better, many other lines also tend to experience weekend afternoon loads similar to weekday P.M. peak conditions, at least for some succession of runs.

Under Alternative B, increases in Muni demand on a Saturday would be greatest at the Northeast and Southeast screenlines. Patronage demand on Muni across the Northeast screenline in the outbound direction would increase by over 1,000 trips at the midday Saturday peak hour. Individual lines that serve the Project Area included in the Northeast screenline which currently operate at crowded or near crowded conditions on a Saturday afternoon include the 83-Pacific, 15-Third, 19-Polk and F-Line (which is planned to be extended to replace the 32-Embarcadero bus line). Across the Southeast screenline, Alternative B would increase demand by 1,500 trips in the outbound direction. Individual lines which currently experience crowded conditions on a Saturday afternoon and which could worsen due to Project-generated demand include the 14-Mission, 30-Stockton, and the 42-Downtown Loop.

Alternative B would generate about 545 new transit trips in the outbound direction across the Northwest screenline during a Saturday midday peak hour. The 38-Geary, currently operating with many runs at capacity during some periods on a weekend afternoon, would likely be most affected. Across the Southwest screenline, Alternative B would generate demand for about 230 outbound transit trips. Lines moving through this screenline that currently have some runs operating at or near capacity on a Saturday afternoon on which a large percentage of Alternative B generated trips would likely occur, include the N-Judah, 14-Mission, 47-Van Ness, and the 49-Van Ness-Mission.

Alternative B-generated transit demand on specific lines identified above would tend to be greater than on other lines moving through the screenline. Since these lines currently experience greatest demand, it is logical to assume that they serve specific destinations better than other lines, although demand variations among lines through a corridor screenline reflect relative levels of service (e.g. frequency and travel time) as well as actual routing and destination. Because most of the specific lines discussed above directly serve the Project Area, it follows that they would serve the greatest amount of transit trips relative to other lines moving through the screenline. The degree to which this demand would spread beyond the specific lines noted above to other, less crowded lines is questionable since the other lines may not serve the same desired destinations. However, at this program level analysis and in the context of measuring aggregate conditions at a screenline, it is not possible to predict with great confidence future patterns of either Muni service or patronage levels on a line-by-line basis. With Alternative B, it may be necessary for Muni to increase Saturday midday service on a number of individual lines, perhaps on some to levels approaching that provided during weekday P.M. peak periods. While equipment could be available to provide additional service (with the possible exception of the F-Line), there would be additional operating and maintenance costs to Muni for any increased service.

PARKING IMPACTS

The parking demand analysis was conducted at a program level of detail, and examines net new parking demand for development assumptions under each Alternative in the year 2010. This section provides the results of the parking demand analysis, followed by a discussion of accessory parking required (as defined under the San Francisco Planning Code) and a comparison between future new parking demand and likely supply.

Potential Planning Code-required accessory parking for new uses in the Project Area is given as a range. Under the assumption that existing land uses which may not continue (usually because hey would be removed or replaced by new uses) currently supply 100 percent of the Code-equired parking, the lower end of the range is based on net changes in land uses. Thus, full Code-required parking amounts for uses that would not continue were subtracted from Code-equired parking for new uses to yield the low end of net potential parking required. Under the pposite assumption that existing land uses that may not continue do not currently provide any Code-required parking, the upper end of the range is based on total new land uses without ubtracting any parking for uses that would not continue. These assumptions are necessary ecause it is not known how much of the existing parking in the Project Area constitutes Code-equired accessory parking.

he range of Code-required accessory parking given does not take into account a number of otential variables which could alter amounts of accessory parking required under the Planning ode. For example, the ranges express Code-required accessory parking as the minimum mount required by the Code, although provision of up to 150 percent of minimum is allowable s accessory parking. Additionally, individual projects approved as a Planned Unit Development r with conditional use authorization may allow adjustments of Code-required parking, such that ey provide an amount estimated to be the actual demand for that project (either more or less an the Code would otherwise require or permit). Section 161(f) of the Code expressly permits reductions of off-street parking requirements in the Northern Waterfront Special Use District No. 1 if certain criteria are met.

Parking demand is estimated based primarily on projected numbers of auto trips generated by the various uses. The parking demand projections are intended to present "order-of-magnitude" parking demand within the Project Area associated with potential uses for each Alternative within the five subareas. At a program level of analysis, parking demand based on net change assumes certain land use changes in the Project Area at a very broad level, and thus cannot account for possible differences between existing uses and future replacement uses that could have higher (or lower) parking demand characteristics than those assumed in this analysis. Table 40 presents the parking demand for the three Alternatives. This table also shows a range of minimum required accessory parking spaces associated with potential land use development for the five subareas.

No Project Alternative

Because of net land use changes, the net parking demand for the Project Area would increase by approximately 530 spaces under the No Project Alternative, as shown on Table 40. The Fisherman's Wharf and Ferry Building subareas would experience an increased demand of about 115 and 105 spaces each. The largest increase in parking demand would be in the Northeast Waterfront subarea, with a demand of approximately 320 new parking spaces.

Under the No Project Alternative, between 505 to 1,045 spaces is the estimated range of required accessory parking spaces under the City Planning Code that could be associated with assumed development. Comparing the range of accessory parking to the approximate 530-space total Project Area demand, demand would fall within the range of accessory spaces likely to be provided under the No Project Alternative. The range of likely Code-required parking for the Fisherman's Wharf, Northeast Waterfront, and Southern Waterfront subareas meets or exceeds the net new parking demand for these subareas. The low end of the Code-required parking range (approximately 50) would not meet the Ferry Building subarea net new demand of approximately 105 spaces. There is a reduced demand for parking in the South Beach/China Basin subarea which results from shifts in the type of land uses assumed; therefore, the high end of the range of Code-required parking would be in excess of forecast demand.

ABLE 40: PARKING DEMAND AND RANGE OF LIKELY CODE-REQUIRED PARKING

Subarea	Net New Demand	Range of Likely Code-Required Parking /a/ Low	Range of Likely Code-Required Parking /a/ High
NO PROJECT ALTERNATIVE			
Fisherman's Wharf	115	145	145
Northeast Waterfront	320	345	380
Ferry Building	105	50	330
South Beach/China Basin	-80	-100	125
Southern Waterfront	70	65	65
TOTAL	530	505	1,045
ALTERNATIVE A			
Fisherman's Wharf	275	345	350
Northeast Waterfront	-5	425	1,215
Ferry Building	170	120	405
South Beach/China Basin	795	930	1,295
Southern Waterfront	2,960	760	780
TOTAL	4,195	2,580	4,045
ALTERNATIVE B			
Fisherman's Wharf	420	310	525
Northeast Waterfront	545	900	1,815
Ferry Building	400	515	800
South Beach/China Basin	1,115	855	1,165
Southern Waterfront	6,235	2,050	2,200
TOTAL	8,715	4,630	6,505

/ Code-required parking was estimated based on the range of land uses for the Alternatives using the San Francisco Planning Code, Section 1.5. All numbers have been rounded.

OURCE: Pittman & Hames Associates, July 1995, and the San Francisco Planning Department, December 1995

Alternative A

Alternative A envisions a moderate level of growth for the waterfront which would increase the demand for parking in the Project Area by about 4,195 new spaces. As presented in Table 40, the Fisherman's Wharf subarea would have an increased parking demand of 275 spaces while the Northeast waterfront subarea would have little change in parking demand. The Ferry Building subarea would have a total parking demand increase of 170 spaces. The parking demand in the South Beach/China Basin and Southern Waterfront would increase by about 795 and 2,960 spaces, respectively. In the Southern Waterfront, this new demand would be generated primarily by new and additional warehouse, light industrial (Pier 70), and cargo shipping (Pier 80) uses.

Under Alternative A, accessory parking required by the Planning Code would range between 2,580 and 4,045 spaces, as shown in Table 40. The only subarea in which the calculated accessory parking would not meet the estimated parking demand is the Southern Waterfront. Due to the extensive parking demand generated by the proposed uses for the Southern Waterfront subarea under Alternative A, actual parking demand would be nearly four times the estimated accessory parking requirements, a potential unmet demand of about 2,200 spaces. However, the unmet demand may be substantially overestimated due to the fact that specific factors for calculating accessory parking demand for non-work trips to industrial and manufacturing uses have not been developed, and this analysis therefore relies on factors for commercial uses instead. The parking demand for the Southern Waterfront subarea was calculated based on the factors used for "non-downtown and residential projects" which are based on commercial and residential parking needs. In addition, the parking survey conducted in February 1995 observed that industrial/manufacturing land uses in the Southern Waterfront subarea accommodate employee parking demand on site; this can be assumed to continue in the future. Furthermore, parking demand could be accommodated on the substantial amount of vacant land found in the Southern Waterfront subarea.

Approximately 3,000 off-street parking spaces are currently provided throughout the Project Area in open lots located on seawall lots owned and controlled by the Port. These facilities provide parking for both WLUP Project Area uses, and land uses in the immediately adjacent area. Under Alternative A, more than half of this parking could potentially be lost by new development occurring in these parcels. This could result in a loss of about 1,200 spaces in the Northeast Waterfront subarea and about 600 spaces in the South Beach-China Basin subarea.

The effect of the loss of this parking would be to increase demand for parking on streets and in facilities to be constructed within the Project Area, and to increase demand for parking in existing lots, garages and on streets in areas adjacent to the Project Area. To the extent that parking demand generated by development within the Project Area coincides with peak parking demand periods (generally weekdays) for land uses in adjacent areas, there could be substantial shortfalls of supply. However, some of the uses that could be developed within the Project Area would be expected to generate demand for parking at times when demand in adjacent areas is lower and more spaces could be made available, such as evenings and weekends. (A one-day survey conducted on December 21, 1995, indicated that public parking adjacent to the Project Area in the vicinity of the Northeast Waterfront subarea is fully occupied during the day, and is not currently open during evenings and weekends.) Under BCDC policies, parking as an accessory use would be permitted on a pier only if it is the minimum amount necessary and there s no upland alternative. To the extent that existing parking on upland sites is displaced by new development, the potential for additional parking to be permitted on a pier could be increased.

There are additional considerations which could potentially affect the actual amount of accessory parking that might be provided, and which cannot be meaningfully quantified in this level of analysis. As noted earlier, development sites of one-half acre or more would qualify for Planned Unit Development discretionary approval. One potential discretionary action through the Planned Unit Development process would be to increase or decrease the amount of parking otherwise required by the City Planning Code, such that the amount provided reflects actual estimated demand for the individual project. A number of zoning districts adjacent to the WLUP Project Area allow, through City Planning Code special provisions and with City Planning Commission discretionary approval, reduction or waiver of parking requirements in various ituations. These districts include the Northern Waterfront Special Use District Number 1 and he South of Market Districts. Somewhat conversely, some sites may have physical size or other onstraints which could affect the ability to provide the required amounts of accessory parking. n these situations, variances may be sought to either provide the required amounts of parking in ther locations, or to reduce or eliminate the parking.

he relationships between parking supply and demand, as individual projects are ultimately eveloped, could be different than those assumed in this analysis. The WLUP designates umerous sites as acceptable for parking as a principal use, although none of the Alternatives nalyzed assumed parking as a principal use at any location. If substantial parking shortfalls hould occur in the future due to demand from new development and/or loss of existing parking due to replacement by new construction, then it could be relieved if parking were established as a principal use on nearby sites designated in the Plan as acceptable for this use. Policies could be adopted independent of the WLUP, such that development adjacent to the C-3 Zoning Districts (primarily the Ferry Building subarea) would be subject to controls and policies similar to those in effect in the C-3, such as no parking requirement for non-residential uses and policies to actively discourage provision of accessory parking for commercial uses. Such policies would tend to limit new parking supply.

Alternative B

The largest amount of new development would occur under Alternative B. Due to its high intensity development, Alternative B would have the greatest parking demand of the three Alternatives, over 8,700 new parking spaces. The Fisherman's Wharf, Northeast Waterfront and Ferry Building subareas would each generate new parking demand of 400 to 550 spaces. The South Beach/China Basin subarea would experience substantial new parking demand (1,115 spaces). Over 60 percent of total new parking demand would occur in the Southern Waterfront subarea (6,235 spaces). As discussed under Alternative A, above, potential seawall lot development and other possible large site development such as Planned Unit Development, and Special Use Districts could affect parking demand, supply and Code-required accessory parking.

Development associated with Alternative B could provide accessory parking of between 4,630 and 6,505 spaces. Total parking demand could be accommodated by the calculated accessory parking for all subareas except the Southern Waterfront. The difference in estimated demand and accessory parking for the Southern Waterfront subarea is due mainly to the proposed large amount of new cargo shipping uses which could take place under Alternative B. Code-required parking for the Southern Waterfront area was based on manufacturing and warehousing activities. However as with Alternative A, calculations for non-commute parking demand for such uses is based on that for commercial uses, which may be an exaggeration of actual demand. In addition, employee parking for industrial and manufacturing land uses, as well as parking for the large trucks normally associated with these uses, is often accommodated within the large amounts of land required for these uses. Furthermore, the substantial amount of vacant land in the Southern Waterfront subarea could be used to accommodate parking needs.

Shortfalls of parking supply relative to demand are not considered significant environmental impacts in the urban context of San Francisco. Parking deficits are an inconvenience to drivers, not significant physical impacts on the environment. In support of the City's "Transit First" policy emphasizing a shift from the personal automobile to public transit use, priority is given to transit treatments before developing transportation treatments which encourage the continued use of the automobile. Faced with severe parking shortages , drivers generally seek and find alternative parking facilities or shift modes of travel (e.g., public transit). Reservoirs of accessory parking adjacent to the waterfront (such as Maritime Plaza, 1 Market and Hills Plaza in the downtown area) could be used by visitors and patrons of waterfront uses. The concept of shared parking is especially useful in the cases where an adjacent land use has parking needs at times when the parking demand for the use providing the accessory parking is low or zero. This concept of shared parking can reduce the need to increase parking capacity at some locations. In addition, publicly available parking adjacent to proposed uses can be employed to help accommodate parking demand.

PEDESTRIAN AND BICYCLE IMPACTS

The number of net new pedestrian trips by Alternative for the weekday P.M. peak hour is given in Table 33, p. 455 (along with trip projections for other travel modes). All pedestrian trips are reported regardless of origin and destination. Transit users and persons arriving to a waterfront destination by car are considered to be pedestrians between the bus stop or parking location and the destination point. These pedestrians are also included in the total pedestrian trips. The No Project Alternative would generate the least number of net new pedestrian trips of the three Project Alternative, approximately 680 net new pedestrian trips. Under Alternative A, approximately 1,795 net new pedestrian trips would be generated, about three times the number of pedestrian trips compared to the No Project Alternative. Alternative B would generate the most pedestrian trips of the Alternatives, approximately 5,385. Alternative B would generate almost eight times more pedestrians than the No Project Alternative, and three times as many pedestrians as Alternative A.

Under the No Project Alternative, the largest increases in pedestrian trips would be in the Northeast Waterfront and the Ferry Building subareas, as shown in Table 33. The Northeast Waterfront subarea is also forecast to generate the most new pedestrian trips of the five subareas or Alternative A, followed by the Ferry Building subarea. Under Alternative B, the Northeast

Waterfront subarea would generate the largest number of pedestrian trips followed by the South Beach/China Basin subarea.

The traffic signal cycle time along The Embarcadero is assumed to increase from the present 80 seconds to 100 seconds of green time during peak periods in order to maximize automobile circulation (as presented in the Mid-Embarcadero/TSS Study). The signals would be engineered with the assumption that pedestrian crossings would be in a single phase, not a two-phase crossing with a wait in the median as is the case at some other locations in San Francisco where the right-of-way is wide. Lengthening the traffic signal cycle would possibly reduce pedestrian signal walk times across The Embarcadero. This would result in longer queuing of pedestrians on sidewalks waiting for the pedestrian walk signal phase. Larger pulses of pedestrians crossing during the available green time could occur also.

The typical width of The Embarcadero roadway is planned to be 120 feet including the median, except at Mission Street where the roadway is 90 feet wide and in front of the Ferry Building with an expanded width of 132 feet. With an average walking speed of four feet per second and typical walk signal time of between 23 and 29 seconds, the average pedestrian could not walk the full width of The Embarcadero in one phase, except at Mission Street. Therefore, many pedestrians would need two traffic signal phases to cross The Embarcadero, waiting on the median. Rather than waiting in the median for a second pedestrian crossing phase, some pedestrians would attempt to continue to cross when on-coming traffic has the right of way. This would create an unsafe condition for those pedestrians and for on-coming traffic. Pedestrians could experience delays in crossing The Embarcadero, as well as being exposed to less than safe (crowded) conditions waiting on the median where the Muni F-line will operate. The WLUP would not create these conditions, but the additional pedestrian trips the EIR Alternatives would generate would be affected by the traffic and transit conditions along The Embarcadero, and would exacerbate potential pedestrian conflicts.

Additionally, many pedestrians typically begin to cross a street just before, or shortly after, the pedestrian signal changes from green “walk” to flashing red “don’t walk.” This situation is often more frequent when there are large queues of pedestrians waiting to cross, and when other conditions might cause delays to the crossing. These situations would also present safety issues. As with the situation discussed in the paragraph above, the WLUP would not directly cause these conditions, although some land uses assumed in the Plan, particularly Assembly/Entertainment/

Recreation uses and development of large parking facilities, would contribute to and possibly exacerbate such potential problems.

Pedestrian crossing volumes are one of many variables taken into account in the local intersection level of service calculations. Because this analysis is being conducted at a program level, it is not possible to accurately estimate potential levels of pedestrian crossings at specific intersections that might result from various combinations of development potential on both piers and seawall lots. Although the intersection level of service calculations have used standard values for pedestrian interference that are much higher than "normal" conditions, it is entirely likely that pedestrian crossings, both of The Embarcadero and of intersecting streets, could be much different than those assumed for this analysis, and that higher volumes could have a greater impact on the intersection level of service because they would create a higher level of conflicts with vehicular movements. Under Alternative A, large numbers of net new pedestrian trips and, therefore crossings, are forecast in the Northeast Waterfront and Ferry Building subareas. The intersection of Embarcadero and Bay has already been identified to have a significant impact under Alternative A. This and other intersections within these subareas that would have a level of service of D or worse under Alternative A would be of special concern.

Under Alternative B, even larger net increases in pedestrian trips are forecast in the Northeast Waterfront subarea, as well as large increases in the China Basin/South Beach subarea. The evel of service at intersections of The Embarcadero with intersecting streets in both subdistricts could potentially be further impacted if pedestrian crossings are much larger than assumed in the ocal traffic analysis. Environmental analyses prepared for individual project proposals within he Project Area would need to identify potential pedestrian travel impacts at relevant ntersections.

Up to 70 weekday P.M. peak hour bicycle trips could be generated under the No Project Alternative, 195 under Alternative A and 1,145 under Alternative B. These reflect less than ne percent of the total weekday P.M. peak hour trips generated by the EIR Alternatives and would not substantially affect travel along or access to The Embarcadero.

GOODS MOVEMENT IMPACTS

Net new trips associated with goods delivery by subarea for each EIR Alternative were estimated nd are presented in Table 41. Truck trips are accounted for in total vehicle trips as presented in

TABLE 41: GOODS MOVEMENT TRIP GENERATION, YEAR 2010, BY SUBAREA

EIR Alternative	Net New Trips by WLUP Subarea Fisherman's Wharf	Northeast Waterfront	Ferry Building	South Beach/China Basin	Southern Waterfront	Total
No Project	165	-10	0	-5	105	255
Alternative A	170	-270	5	345	545	685
Alternative B	130	-235	20	-100	790	605

NOTE: All numbers have been rounded.

SOURCE: Wilbur Smith Associates, July 1995, and San Francisco Planning Department, December 1995

Table 33, p. 455. In addition, the intersection levels of service analysis presented on pp. 466-484 also incorporates the effects of the projected goods and service delivery trips.

There are six types of vehicles used in goods and services travel in San Francisco. These include (1) cars and pickup trucks, which are estimated to make up 25 percent of total truck trips; (2) vans, with 42 percent of the total truck trips; (3) small two-axle delivery trucks, comprising 9 percent of all truck trips; (4) large two-axle delivery trucks, with an estimated 19 percent of the truck trips; (5) large three-axle delivery trucks, with a 4 percent truck share; and (6) four-axle tractor-trailers, with 1 percent of the total truck trips.

No Project Alternative

The majority of net new goods delivery trips would be generated in the Fisherman's Wharf subarea, followed by the Southern Waterfront subarea, under the No Project Alternative. Most of these trips would be generated by the light industrial uses in the Fisherman's Wharf subarea and cargo shipping uses in the Southern Waterfront. Although the Fisherman's Wharf subarea does not have the facilities to accommodate increases in delivery traffic without traffic lanes being blocked and temporary traffic delays, most of the net new goods delivery trips would be generated by the fishing industry which has its peak truck operations in the early morning hours prior to retail shops and businesses opening. Thus, impacts would be primarily on the fishing ndustry vehicles and operators.

As shown in Table 41, the number of daily goods movements for the Northeast Waterfront, Ferry Building and South Beach/China Basin subareas are expected to be relatively unchanged or slightly reduced under the No Project Alternative.

Alternative A

Alternative A would generate the most net new trips for goods movement of the three Alternatives. With implementation of Alternative A, the proposed land uses in the South Beach/China Basin subarea would generate approximately 345 new daily goods delivery movements associated mostly with uses such as retail, restaurant, and warehouse uses. The Southern Waterfront would generate the most new goods movements with approximately 545 trips, the majority of which are generated by warehousing and cargo shipping. Most trucks entering and/or leaving the Southern Waterfront subarea would use either the U.S. 101/Cesar Chavez Street/Third Street corridor or the I-280/Cesar Chavez Street/Third Street corridor. The Northeast Waterfront subarea would see a reduction in daily goods deliveries. Reduced numbers of goods movements could slightly improve traffic movement in the Northeast Waterfront ubarea compared to the existing situation where tractor-trailers occasionally cause temporary blocking of northbound lanes on The Embarcadero while they are backing onto the pier shed oading areas. As with the No Project Alternative, new delivery trips in the Fisherman's Wharf rea would mostly occur in the early morning hours and would not affect peak hour traffic perations.

ome truck traffic could affect residents living in the northern portions of the South Bayshore Bayview-Hunters Point) district and in pockets of dwellings on the east side of Potrero Hill etween I-280 and Third Street. However, most South Bayshore residential areas are located outh of Evans Avenue, which is south of the southernmost working Piers 96-98, the South ontainer Terminal. Trucks accessing the South Container Terminal use roadways such as argo Way and Evans Avenue to access Third and Cesar Chavez Streets (leading to the area eeways), all of which are north of the majority of the residential areas in the South Bayshore istrict.

Recent and proposed improvements to Cesar Chavez Street (widening between Third Street and Mississippi Street and geometric improvements benefiting truck movement), coupled with the recent full re-opening of I-280 and the I-280/U.S. 101 interchange, would provide a more viable truck route between the Project Area, other South Bayshore industrial areas, and I-280 freeway as an alternative to Third Street. Some of the truck trips generated under Alternative A could use portions of Third Street, contributing to a continuation of negative effects on the corridor caused by heavy trucks and associated noise and dust. It is not possible to predict whether the potential additional truck traffic would be greater than the reduction in existing Third Street truck traffic due to Cesar Chavez Street improvements. Improvement measures are suggested (Section VI.D. Mitigation Measures - Transportation, Improvement measure 2) that could help reduce potential truck trip impacts.

Alternative B

Overall, Alternative B would generate slightly fewer goods movement trips than Alternative A. The Southern Waterfront subarea would generate the majority of the daily goods movements (approximately 790), as shown in Table 41, p. 504. These movements are based on expansion of cargo shipping at the San Francisco waterfront in the Project Area. Fisherman's Wharf development would generate approximately 130 daily goods delivery trips. As with the No Project Alternative and Alternative A, increases in delivery trips in the Fisherman's Wharf subarea could cause blocked traffic lanes and temporary traffic delays due to the lack of facilities to accommodate loading and unloading of goods. However, most of the net new truck trips in the Fisherman's Wharf subarea would be generated by the fishing industry which has its peak truck operations in the early morning hours prior to retail shops and businesses opening. Thus, impacts would be primarily on the fishing industry vehicles and operators. The Northeast Waterfront and South Beach/China Basin subareas would realize a reduction in goods movements with the implementation of Alternative B (due to the shift in predominant land uses from light industrial and manufacturing on the piers to commercial and Assembly/Entertainment/Recreation uses), which could serve to eliminate temporary traffic delays and blocked travel lanes as currently experienced for travels northbound on The Embarcadero due to tractor-trailer trucks occasionally blocking lanes on The Embarcadero while they are backing onto the pier shed loading areas.

As with Alternative A, increased truck volumes could affect residents and businesses in the Bayview-Hunters Point and east side of Potrero Hill areas. Because of assumed increases in ndustrial activity within the Southern Waterfront over those assumed in Alternative A, there could be somewhat more possible effects to these communities than identified in the Alternative A discussion above, including Third Street. Improvement measures referenced under Alternative A could help reduce potential effects.

With a large increase in cargo shipping activities assumed, Alternative B would also generate additional rail freight activity. Currently, the Caltrain Joint Powers Board (JPB) arrangement with Southern Pacific is to allow freight rail traffic during nighttime hours (between midnight and 6:00 A.M.), to avoid potential delays to Caltrain commuter passenger service. On average, one train per day carrying freight, five to six days per week, operates on the shared right-of-way, between South San Francisco and Warm Springs (Fremont). Caltrain currently operates about one passenger train per hour during midday and evening hours. With this level of service it would be possible for the Port to use the tracks for freight access to the South San Francisco yards, although it would need to use short trains. Caltrain proposes to increase its passenger service, and could operate an average of two trains per hour in off-peak periods. Because the right-of-way and other necessary infrastructure is not available to provide any additional sidings, joint use of the trackage (for both passenger and freight activities) could result in possible delays.

t is more likely that the Port would need to operate longer trains during the current window nighttime hours). This could result in longer delays to vehicular traffic at-grade crossings, rimarily Third Street in the vicinity of Islais Creek.[1]

ROPOSED CHANGES TO FISHERMAN'S WHARF CIRCULATION

roadway and traffic circulation variant has been analyzed for consideration of possible rculation changes to the triangle area (Seawall Lot #301) bounded by The Embarcadero with fferson, Powell, and Taylor Streets in the Fisherman's Wharf subarea. The major changes ould be conversion of Taylor Street between Bay Street to The Embarcadero from a one-way uthbound street to a two-way street and conversion of The Embarcadero between Powell and aylor Streets from one-way westbound to a two-way street. There would be a reconfiguration the intersection at The Embarcadero, with Jefferson and Powell Streets allowing southbound affic to enter this intersection. In addition, vehicles exiting the parking facility in this triangle ould be able to exit onto Taylor Street and not onto Jefferson Street west of Mason Street.

The WLUP EIR study intersections that would be most affected by these changes are Jefferson at Jones Streets and Jefferson at Powell Streets. The Jefferson/Jones intersection would remain at LOS B for all three Alternatives under the variant, and the Jefferson/Powell intersection would remain at LOS C. Calculations show that delay would increase slightly, but the service levels would remain the same.

The ramifications of the proposed circulation changes are:

- Traffic for Pier 45 and Hyde Street Pier would be able to use Taylor, Mason and Jones Streets for both access and egress. There would be a negligible decrease in traffic on Jefferson between Mason and Jones Streets; less traffic on Jones between Jefferson and Beach; more northbound traffic on Taylor Street; and more southbound traffic on Powell Street.

- Traffic volumes on the north approach at the intersection of The Embarcadero and Jefferson/Powell Streets would increase with traffic diverting from Jefferson, while volumes from the south may decrease with traffic diverting to Taylor Street.

- Traffic volumes would increase on Mason Street as a result of the direct access from the triangle parking lot, resulting in a decrease in traffic on Jefferson west of Mason Street, and a decrease in southbound traffic on Taylor and Jones Streets south of Jefferson Street.

NOTES - Transportation

[1] Walt Stringer, Joint Powers Board, telephone conversation, February 27, 1996.

. NOISE

MPACTS OF ALL ALTERNATIVES

oise impacts from a project can be categorized as those resulting from construction and those om operational activities. Construction noise would have a short-term effect; operational oise, primarily from motor-vehicle traffic, would continue throughout the lifetime of the roject. Operational noise sources resulting from development of the EIR Alternatives include oth mobile and stationary sources: mobile source emissions resulting from an increase in motor ehicle and ship traffic, and stationary sources such as emissions from operation of new facilities .g., cargo loading) and building mechanical equipment. Noise impacts can also occur due to LUP policies and/or EIR Alternatives that establish noise-sensitive land uses in, or attract rge numbers of people to, locations where existing noise levels are high.

ll Subareas

onstruction

ypical composite noise levels for construction activities, and distances of various noise ntours from construction sites, are presented in Table 42. Noise-sensitive uses, including sidences, exist in or near all subareas of the Project Area, and could be subjected to noise from nstruction and demolition. Standard demolition activities employ equipment similar to the nstruction activities shown in Table 42 and would have similar, but shorter term, noise pacts. Construction noise impacts from individual projects would be roughly equivalent for three Alternatives in terms of the resultant increases over existing ambient noise levels. wever, the extent of land use changes (in terms of new building space) estimated under ternative A is greater than that under the No Project Alternative, and the extent of land use anges estimated under Alternative B is greater than that under Alternative A. In addition, re are likely to be more instances of multiple projects under construction at the same time, d larger-scale construction projects, under Alternative B. Consequently, while the absolute rease over ambient noise levels would be roughly equivalent for each construction project der each Alternative, the duration of the construction period would differ, depending upon the ent of land use change proposed and the extent to which the change involves new construction her than re-use of existing structures. The extent to which noise-sensitive uses near particular areas would be exposed to construction noise would differ by Alternative, as discussed later his section.

TABLE 42: TYPICAL NOISE LEVELS DURING CONSTRUCTION OF LARGE BUILDINGS

Construction Activity	Noise Level at 50 feet (dBA, Leq)	Approximate Distance (ft.) to Reduce Noise to Given Level (dBA, Leq) /a/		
		60	65	70
Ground Clearing	84	790	450	250
Excavation	89	1,400	800	450
Foundations	78	400	220	130
Erection	85	890	500	280
Finishing (exterior)	89	1,400	800	450

/a/ Calculations assume a 6 dBA reduction for each doubling of distance from the noise source.

SOURCE: Environmental Science Associates

Some phases of building construction could require pile driving at individual facilities. The need for pile driving would be determined by site-specific engineering studies. Pile driving can generate noise levels of 90 to 105 dBA at a distance of 50 feet. Noise levels of 78 to 93 dBA are possible at nearby noise-sensitive uses (200 feet away). This would be an intermittent impact throughout the life of the Waterfront Land Use Plan (WLUP). Other noise-sensitive uses located within approximately 1,600 feet of pile driving activity could also be substantially affected, depending on the presence of intervening barriers or other insulating materials.[1] Although construction activities would be likely to occur only during daytime hours, construction noise would still be disruptive to residents and local businesses.[1]

Fisherman's Wharf

Construction

Development of the Fisherman's Wharf subarea under the No Project Alternative would result in an increase in 143,000 square feet of building space in use over existing conditions. Much of that increase would be related to the consolidation of fish processing in the subarea, and as such ould not involve demolition and construction of new structures. Alternative A would result in net increase of about 271,000 square feet, most of which would be (in addition to changes nder the No Project Alternative) visitor and specialty retail and partial development of the roposed Fisheries Center at Pier 45. These changes would involve some demolition and new onstruction. Alternative B would result in an increase of about 629,000 square feet, primarily om full development of the proposed Fisheries Center at Pier 45, and development of sitor/specialty retail uses (in addition to changes under the No Project Alternative). There ould also be development of one or more hotels on seawall lots. Many of the changes in land se would involve demolition and new construction. Consequently, the extent and duration of onstruction noise impacts in the Fisherman's Wharf Subarea would be greater under Alternative than the No Project Alternative, and greater under Alternative B than Alternative A.

ehicle Traffic

he net change in development in the Fisherman's Wharf Waterfront under the No Project lternative would generate approximately 12 P.M. peak hour vehicle trips; development under lternatives A and B would generate 110 and 160 new vehicle trips, respectively. Using the HWA traffic-noise prediction model, year 2010 noise levels from vehicle traffic for all three lternatives were calculated and compared to existing levels. The results of this modeling effort or all subareas) are shown in Table 43. For the modeling effort, peak-hour P.M. traffic lumes during a weekday were used and noise levels at about 50 feet from the centerline of adway segments most affected by the Alternatives (generally near intersections with a edicted LOS of E or F, as shown in Table 36, p. 467) were calculated. The roadway segment alyzed in the Fisherman's Wharf Subarea was Bay Street between Columbus Avenue and ylor Street.

seen from Table 43, the addition of Alternative-related traffic would not noticeably increase bient noise levels (i.e., the project would not increase ambient noise levels by more than BA, L_{eq}) on Bay Street. Traffic-generated noise on this roadway would not noticeably rease with the addition of traffic from the No Project Alternative or Alternative A in 2010. e addition of traffic from Alternative B would result in a less-than-significant increase of BA over existing noise levels.

TABLE 43: ROADSIDE NOISE LEVELS ADJACENT TO AFFECTED ROADWAYS

Roadway	Nearest Subarea(s)	Noise Level (dBA, Leq) Existing (1995)	2010 No Project	2010 with Alternative A	2010 with Alternative
Bay Street between Columbus Avenue and Taylor Street	Fisherman's Wharf	70	70	70	71
The Embarcadero between North Point and Bay Streets	Northeast	68	69	69	69
The Embarcadero between Broadway and Washington Street	Northeast/ Ferry Building	72	73	73	73
The Embarcadero between Bryant and Folsom Streets/a/	Ferry Building/ South Beach	69	70	70	72
Third Street between King and Sixteenth Streets	South Beach	72	74	74	74
Third Street between Twenty-fifth Street and Caesar Chavez Street	Southern	75	75	75	75

/a/ Estimated (modeled) noise levels reflect the noise contribution of vehicle traffic along The Embarcadero. The San Francisco-Oakland Bay Bridge also contributes a substantial amount of roadway noise at this location, not included in the estimates in this table (that would increase the peak-hour Leq by 7 dBA in the existing scenario, for example).

SOURCE: Environmental Science Associates, 1995; Wilbur Smith Associates, 1995

Land Use Compatibility

Land uses that would be developed in the Fisherman's Wharf subarea under the three Alternatives are similar to those that currently exist in the area (fish handling and processing, Hyde Street Pier, excursion boat facilities, retail and hotel). Incompatible land uses that would be major new noise sources are not proposed. Planned open space and public access within the subarea (e.g., Pier 43 and 43½ public access areas, the "Triangle" public access improvements, Pier 47A public access, and Hyde Street Harbor access), as well as other public access that would be provided as part of new developments, would be exposed to potentially high levels of maritime and, at some locations, surface traffic noise (modeled noise levels of up to 71 dBA, L_{eq} under Alternative B). These noise levels are similar to existing levels and would be expected in an urban and maritime environment; thus the introduction of the public access uses would not result in a significant noise impact. Hotels that would be developed in Alternative B would be subject to Title 24 standards of noise insulation to ensure adequate attenuation of noise from existing sources. Title 24 analyses generally require that noise generated by known future projects be included in determination of required attenuation levels.[2] Existing monitored noise levels in the wharf are 72 dBA, L_{dn}. The Land Use Compatibility Chart in the San Francisco Master Plan (see Section IV.E., Environmental Setting, Noise, Figure 31, p. 203) states that hotel land uses proposed for sound level environments of 60 to 80 dBA, L_{dn} should be developed only after a detailed analysis of the noise reduction requirements is made and insulation features are added into the design.

Although no residential uses are specifically assumed to occur within the Fisherman's Wharf subarea under any of the EIR Alternatives, residential uses within the subarea are proposed as an acceptable use in the WLUP. Multi-family residential uses (the type that would be developed in the Project Area) would also be subject to Title 24 standards. According to the Land Use Compatibility Chart in the Master Plan, residential land uses proposed for noise environments of 65 dBA, L_{dn} or greater should generally be discouraged, but can proceed if a detailed analysis of the noise reduction requirements is made and insulation features are added into the design.

Northeast Waterfront

Construction

Development of the Northeast Waterfront under the No Project Alternative would result in an ncrease of 435,000 square feet of building space in use over existing conditions, including the ddition of 125 hotel rooms and 80 residential units on seawall lots. There would be some onstruction activities, particularly on seawall lots, that could have noise impacts on nearby esidential and open space uses. Alternative A would result in an increase of 620,000 square feet f building space in use. The focus of Alternative A would be the adaptive reuse of buildings acated due to the relocation of cargo shipping operations and the cruise terminal and associated evelopment on seawall lots. Consequently, construction noise impacts could be similar to or ss than those under the No Project Alternative. Alternative B would result in an increase of building space in use of 1,200,000 square feet. However, the focus of Alternative B would be on development and redevelopment of piers and seawall lots in the Bay Street Pier and Broadway Pier Mixed Use Opportunity Areas. Consequently, the extent and duration of construction noise impacts in the Northeast Waterfront would be greater under Alternative B than Alternative A or the No Project Alternative. Construction noise impacts would include noise from pier reconstruction and fill placement and replacement, especially under Alternative B.

Vehicle Traffic

The net change in development in the Northeast Waterfront under the No Project Alternative would generate approximately 36 P.M. peak hour vehicle trips; development under Alternatives A and B would generate 121 and 1,278 new vehicle trips, respectively. Using the FHWA traffic-noise prediction model, year 2010 noise levels from vehicle traffic for all three Alternatives were calculated and compared to existing levels. The roadway segment analyzed in the Northeast Waterfront was The Embarcadero between North Point and Bay Streets.

As seen from Table 43, p. 512, the addition of Alternative-related traffic would not noticeably increase ambient noise levels on this segment of The Embarcadero. Addition of traffic from each of the three Alternatives would result in a less-than-significant increase of 1 dBA, L_{eq} over existing noise levels.

Land Use Compatibility

Land uses that would be developed in the Northeast Waterfront subarea under the three Alternatives are generally similar to those that currently exist in the area (office, restaurants, public open space, excursion boat and cargo-related operations). Incompatible land uses that would be major new noise sources are not proposed. Amusement/entertainment uses that would be developed under Alternatives A and B could attract high volumes of visitors. The above vehicle traffic analysis includes trips generated by such land uses. Existing open space (such as Pier 7) and residential land uses within and near the Northeast Waterfront subarea are located in an area that regularly experiences maritime noise and noise from traffic on The Embarcadero (measured noise levels of 68 dBA, L_{eq}) and would not be substantially affected by proposed land uses. Planned open space and public access within the subarea (such as the Pier 23 public access improvements) and other public access that would be provided as part of new developments, particularly under Alternative B, would be exposed to potentially high levels of maritime and, at some locations, surface traffic noise (modeled surface traffic noise levels of 69 to 73 dBA, Leq under Alternative B). These noise levels would be expected in an urban and maritime environment; thus the introduction of the public access uses would not result in a significant noise impact.

Hotel and/or residential land uses are proposed under each of the three Alternatives, and would be subject to Title 24 standards of noise insulation and the Land Use Compatibility standards in he San Francisco Master Plan, as discussed above. Existing monitored noise levels within the subarea are 72 dBA, L_{dn}.

Ferry Building

Construction

The land use changes that would occur under the No Project Alternative (+193,000 square feet of building space) would be related primarily to the Ferry Building renovation, Ferry Terminal project, and Rincon Park construction. There could be some construction noise impacts related o these activities. Alternative A would result in an increase of 239,000 square feet, involving in addition to the No Project Alternative) retail and assembly/entertainment uses and additional erry terminal facilities. Although the focus would be on adaptive re-use of existing structures, here could be some additional construction noise impacts. Alternative B would result in a ubstantial increase in building space in use (+471,000 square feet), and would involve (in ddition to changes under the No Project Alternative) development or redevelopment of seawall ots and piers for retail and assembly/entertainment uses and associated public open space. Consequently, the extent and duration of construction noise impacts could be greater under Alternative B than Alternative A or the No Project Alternative. Construction noise impacts would include noise from pier reconstruction and fill placement and replacement, especially nder Alternative B.

Vehicle Traffic

he net change in development in the Ferry Building Waterfront under the No Project lternative would generate approximately 112 P.M. peak hour vehicle trips; development under lternatives A and B would generate 143 and 122 new vehicle trips, respectively. Using the HWA traffic-noise prediction model, year 2010 noise levels from vehicle traffic for all three lternatives were calculated and compared to existing levels. The roadway segment analyzed in e Ferry Building subarea was The Embarcadero between Broadway and Washington Street.

As seen from Table 43, p. 512, the addition of Alternative-related traffic would not noticeably increase ambient noise levels on this segment of The Embarcadero. Addition of traffic from each of the three Alternatives would result in an increase of 1 dBA over existing noise levels.

Land Use Compatibility

Land uses that would be developed in the Ferry Building subarea under the three Alternatives are generally similar to those that currently exist in the area (ferry service, restaurants, the Promenade, office and retail). Incompatible land uses that would be major new noise sources are not proposed. Noise sensitive land uses (i.e., hotel or residential land uses) are not assumed under any of the three Alternatives. Existing open space and residential land uses in and near the Ferry Building subarea (Golden Gateway Condominiums and Justin Herman Plaza) are located in an area that regularly experiences maritime noise and noise from traffic on The Embarcadero (measured noise levels of 62 to 63 dBA, L_{eq}) and would not be substantially affected by proposed land uses. Planned open space and public access within the subarea (such as the Ferry Terminal public access, Rincon Park and Ferry Building Plaza) and other public access that would be provided as part of new developments, particularly under Alternative B, would be exposed to potentially high levels of maritime and, at some locations, surface traffic noise (modeled surface traffic noise levels of up to 72 dBA, L_{eq}). These noise levels would be expected in an urban and maritime environment; thus introduction of public access uses would not result in a significant noise impact. Rincon Park might be considered to be incompatible with the noise levels expected, but it will be developed regardless of the WLUP and implementation of the WLUP would not result in a substantial increases in noise levels in that area.

South Beach/China Basin

Construction

There would be a relatively small increase in building space in use (+159,000 square feet) under the No Project Alternative; most of the change would involve uses vacating sites and structures and would not involve demolition. Little new development would occur under the No Project Alternative. Alternative A would result in a substantial increase in building space in use (1,107,000 square feet), involving development of retail, assembly/entertainment, residential, warehouse and light industrial land uses and a new cruise terminal. Development of some of these new uses would result in construction and demolition noise impacts. Alternative B would also result in substantial development (a 1,273,000 square-foot increase in building space), primarily involving cargo shipping, retail, and assembly/entertainment uses, and hotel(s) on seawall lots. Alternative B would involve new development on piers and seawall lots in several Mixed Use Opportunity Areas. Consequently, the extent and duration of construction noise mpacts would be greater under Alternative B than under Alternative A or the No Project Alternative. Construction noise impacts would include noise from pier reconstruction and fill placement and replacement, especially under Alternative B.

Vehicle Traffic

The net change in development in the South Beach/China Basin subarea under the No Project Alternative would actually generate a net decrease in P.M. peak hour vehicle trips; development nder Alternatives A and B would generate 469 and 2,120 new vehicle trips, respectively. Using he FHWA traffic-noise prediction model, year 2010 noise levels from vehicle traffic for all hree Alternatives were calculated and compared to existing levels. The roadway segment nalyzed in the South Beach/China Basin subarea was The Embarcadero between Bryant and Folsom Streets.

As seen from Table 43, p. 512, the addition of traffic generated by the any of the EIR Alternatives would not noticeably increase ambient noise levels on this segment of The Embarcadero. Addition of traffic from the No Project Alternative or Alternative A would result n an increase of one dBA over existing noise levels. Addition of traffic from Alternative B would result in an increase of two dBA over existing noise levels.

and Use Compatibility

and uses that would be developed in the South Beach/China Basin subarea under all lternatives are generally similar to those that currently exist in the area (recreational boating, esidential, retail, office, storage, maritime support). These proposed uses are compatible with xisting uses. Existing open space and public access and residential land uses in and near the outh Beach/China Basin subarea (such as the Embarcadero Promenade, Pier 38 and South each Harbor public access, phase one of South Beach Park, Mission Creek Harbor public ccess, and Agua Vista Park, and the residences along The Embarcadero in South Beach) are cated in an area that regularly experiences maritime and surface traffic noise (measured noise vels of 63 dBA, L_{eq} near Agua Vista Park, up to 74-76 dBA, L_{eq} in South Beach) and would ot be substantially affected by proposed land uses. Planned open space and public access within the subarea (such as phase two of South Beach Park and open space designated in the Mission Bay Plan) and other public access that would be provided as part of new developments, particularly under Alternative B, would be exposed to potentially high levels of maritime and, in some locations, surface traffic noise (modeled surface traffic noise levels of up to 74 dBA, L_{eq}). These noise levels would be expected in an urban and maritime environment, but parks and open space might be considered to be incompatible with high noise levels. Users of these parks and open spaces could be disturbed by the predicted high noise levels, but noise would not damage hearing or substantially interfere with wildlife.

Build-out of the Mission Bay Specific Plan would involve development of market rate and affordable housing and open space uses primarily south of China Basin to Mariposa Street. Break bulk cargo activities at Piers 48 and 50 would be fully utilized under Alternative B. Full utilization of these facilities could potentially increase noise levels and affect the easternmost residences in the Mission Bay development.

Residential land uses proposed under Alternative A would be subject to the Title 24 standards of noise insulation and the Land Use Compatibility standards in the San Francisco Master Plan, as discussed above. Alternative B would locate one or more hotels within the South Beach/China Basin Waterfront that would be also subject to Title 24 and Master Plan Land use Compatibility standards. Existing monitored noise levels along The Embarcadero at the northern end of the South Beach/China Basin subarea (near the San Francisco-Oakland Bay Bridge) are 72 to 76 dBA, L_{dn}.

Southern Waterfront

Construction

Little new development would occur in the Southern Waterfront under the No Project Alternative, other than an increase of cargo shipping activity (+100,000 square feet of building space) that would involve greater use of existing facilities. Alternative A would result in a building space increase of 1,159,000 square feet, including (in addition to the cargo shipping uses in the No Project Alternative) development of warehouse and light and general industrial land uses. Some of these uses (such as the cogeneration plant) would involve new construction. Alternative B would result in major development (a building space use increase of 2,180,000 square feet), primarily involving cargo shipping. However, construction noise impacts would probably not occur in this subarea because of the lack of sensitive noise receptors near the waterfront. While a single residential structure exists on the east side of Third Street, approximately 200 feet from the subarea boundary, traffic on Third Street generates substantial existing noise at this residence (72 dBA, L_{eq}) and attenuated construction noise levels shown in Table 42, p. 510, would not be substantially above the monitored noise level.

Vehicle Traffic

The net change in development in the Southern Waterfront under the No Project Alternative would generate approximately 11 P.M. peak hour vehicle trips; development under Alternatives A and B would generate 309 and 734 new vehicle trips, respectively. Using the FHWA traffic-noise prediction model, year 2010 noise levels from vehicle traffic for all three Alternatives were calculated and compared to existing levels. The roadway segment analyzed in the Southern Waterfront subarea was Third Street between Twenty-fifth and Cesar Chavez (Army) Streets.

As seen from Table 43, p. 512, the addition of Alternative-related traffic would not noticeably increase ambient noise levels on this segment of Third Street. Addition of traffic from each of the three Alternatives would not result in an increase over existing noise levels.

Land Use Compatibility

Land uses proposed for the Southern Waterfront subarea under the three Alternatives are generally similar to those that currently exist in the area (industrial, cargo shipping). These proposed uses are compatible with existing uses. Noise impacts would probably not occur in this subarea because of the lack of sensitive noise receptors near the subarea. The proposed cogeneration facility would be located on Seawall Lot 344, which is one-half mile from the nearest residential land uses.

Noise-sensitive land uses (i.e., residential land uses) are not assumed for the subarea under any of the three Alternatives. However, residential uses are deemed acceptable for SWL 354 by the WLUP. Residential uses could conflict with surrounding industrial uses there. Office space proposed under Alternative B could potentially conflict with the extensive increase in cargo shipping land use within the subarea under this Alternative. Planned open space areas (such as the planned open space at Pier 98) and public access that would be provided as part of new developments, particularly under Alternative B, would be exposed to potentially high levels of maritime and, in some locations, surface traffic noise (modeled surface traffic noise levels of 75 dBA, Leq); the presence of this noise-sensitive use could conflict with the extensive increase in cargo shipping land use within the subarea under Alternative B. Users of planned public access and open spaces could be disturbed by the predicted high noise levels, but noise would not damage hearing or substantially interfere with wildlife.

NOTES - Noise

1 Harns, Cyril M., *Handbook of Noise Control*, 1979.

2 Ballard, George, Acoustical Engineer, Enviro-Tech, telephone communication, January 11, 1996.

F. AIR QUALITY

SIGNIFICANCE CRITERIA

Under the current (adopted) Bay Area Air Quality Management District (BAAQMD) guidelines, the BAAQMD recommends using the more stringent of two different tests to determine whether air emissions from a project would have a significant adverse effect on the environment. Under these tests, new emissions from the proposed project would be considered significant if the emission of any single pollutant would exceed the significance criteria established by BAAQMD of 150 pounds per day of HC, NO_x, SO_x, or PM_{10}. For CO, the significance criterion of 550 pounds per day is recommended by the BAAQMD to be used as a significance threshold for stationary sources only. Significance of CO emissions from mobile sources is determined by modeling the ambient CO concentration under project conditions and comparing the resultant one- and eight-hour concentrations to the respective State CO standards of 20.0 and 9.0 parts per million (ppm). If a violation of the CO standard is projected to already exist without the project, the project's impact would be considered significant if it would contribute substantially to the existing violation.

The second BAAQMD-recommended emissions test defines a project impact as significant if resulting emissions of any criteria contaminant exceed one percent of county-wide emissions of the contaminant.[1] This analysis applies the one percent of countywide emissions significance test to the total of mobile and stationary source emissions. The BAAQMD one-percent significance threshold is not meant to predict excesses of ambient standards; rather, it is meant to underscore the need for local government to consider incorporation of mitigation measures to reduce the projected emissions. Evaluation of both BAAQMD significance tests is necessary for each pollutant emitted by the project to determine which test is more stringent and whether a significant impact to air quality would occur.

For project and cumulative air quality impacts, BAAQMD recommends evaluating a project with respect to population and employment projections used in developing the *'94 Clean Air Plan* (CAP). The CAP outlines the strategy for future attainment of air pollution standards as required by State law. The population and employment projections used in determining the effectiveness of the CAP were published by the Association of Bay Area Governments (ABAG). If a project would result in population and employment in excess of ABAG projections, attainment of air quality standards as projected in the CAP could be delayed. Such a delay would be considered to constitute a significant impact to air quality.

BAAQMD is currently considering new Draft CEQA Guidelines.[2] The Draft Guidelines are different from the current guidelines in that they contain significance criteria specific to local plans. Local plans found to be consistent with the *'94 Clean Air Plan* would have a less-than-significant effect on regional air quality. The Draft Guidelines have not been used to evaluate the impacts of the WLUP because the Guidelines have not been formally adopted by the BAAQMD. A discussion of potential impacts relative to the Draft Guidelines is included at the end of this section.

CONSTRUCTION

Under all of the EIR Alternatives, particulate matter, in the form of fugitive dust, would be generated through building demolition, land clearing, excavation, and grading activities and through movement of trucks and heavy equipment. The total amount of fugitive dust generated over the Project Area would vary by Alternative, as discussed later in this section. Fugitive dust emissions would vary according to the level and type of activity, silt content of the soil, and prevailing weather. Construction-related fugitive dust consists of larger-sized particles (greater than ten microns in diameter) as well as the finer particles that account for ambient PM_{10} levels.

The larger-sized particles would be more of a nuisance than a health hazard, except to persons with respiratory problems, and would settle out of the atmosphere close to the specific project site. The finer particles raised by construction would contribute to background PM_{10} levels to the extent that the State 24-hour average ambient standard, 50 micrograms per cubic meter, could be violated on occasion in the vicinity of construction. The amounts of PM_{10} generated by some projects could be significant. Measures identified in Section VI.F., Mitigation Measures, Air Quality, pp. 649-650, would avoid or substantially reduce generation of PM_{10}.

Construction would also involve emissions of criteria air pollutants from construction vehicles and equipment. These emissions would be temporary and would only incrementally contribute to local and regional air quality.

IMPLEMENTATION

Air pollutant sources resulting from development under the EIR Alternatives include both mobile and stationary sources: mobile source emissions resulting from an increase in vehicle traffic and marine vessel activity, and stationary source emissions resulting from the burning of natural gas and the consumption of electricity.

Vehicular Traffic

Carbon monoxide concentrations normally consist of an area-wide background level, with micro-scale peaks superimposed on local sources. The background concentration is a function of area-wide traffic characteristics, topography, and climatology, while the local concentration is a function of traffic characteristics at the point of interest, such as heavily traveled roads and intersections. For this analysis, worst-case estimates of local CO concentrations were added to background CO concentrations.

Roadside CO concentrations at selected intersections and road segments in the vicinity of the Project Area were estimated under worst-case atmospheric conditions for both existing traffic levels and future anticipated levels in 2010. The intersections selected were those found to operate at a level of service E or F in the transportation analysis (see Section V.D., Environmental Impacts, Transportation, Table 36, p. 467). The results are shown in Table 44.

The results indicate that existing CO levels currently violate State eight-hour CO standards for two of the intersections analyzed (Columbus Avenue at Bay Street and Embarcadero at Bay Street), but that by 2010, the CO standard would no longer be violated at any intersection, under any Alternative. CO emissions are projected to decrease in the future because of improved engine efficiencies and cleaner burning fuels. The decline in CO concentrations over time apparent at some of the intersections is a result of the expected decline of future emission rates as cleaner new vehicles enter the vehicle mix, and is not an indication that the number of vehicles through the intersection is dropping.

The EIR Alternatives would generate additional motor vehicle trips that would also result in an increase in the regional emission of criteria pollutants. Total vehicular traffic emissions for each Alternative in 2010 are presented in Table 45, p. 525. The results in the table indicate that emissions generated under Alternative A (the increment over the No Project Alternative) would exceed the thresholds for PM_{10}, and emissions generated under Alternative B (the increment over the No Project Alternative) would exceed the thresholds for NO_x, HC, and PM_{10}. (The increment is used to evaluate emission increases because the No Project

TABLE 44: ESTIMATED WORST-CASE EXISTING AND FUTURE CO CONCENTRATIONS IN THE PROJECT AREA VICINITY

		Concentration by Year (ppm)/a,b/			
		1995	2010		
Intersection	Averaging Period	Existing Conditions	No Project	Alternative A	Alternative B
Columbus Avenue at Bay Street	1 hour	13.5	7.6	7.6	7.6
	8 hour	9.1/c/	5.2	5.2	5.2
Embarcadero and North Point Street	1 hour	11.0	7.4	7.4	7.4
	8 hour	7.4	5.0	5.0	5.0
Embarcadero and Bay Street	1 hour	14.4	8.2	8.1	8.4
	8 hour	9.8	5.6	5.5	5.7
Embarcadero and Sansome Street	1 hour	12.9	7.3	7.3	7.3
	8 hour	8.7	4.9	4.9	4.9
Embarcadero and Bryant Street	1 hour	10.3	6.9	7.0	7.2
	8 hour	6.9	4.7	4.7	4.9
Third Street and King Street	1 hour	9.9	7.9	8.0	8.1
	8 hour	6.6	5.4	5.4	5.5

/a/ Estimates were calculated using CALINE4, a computer-based air pollution dispersion model developed by the California Department of Transportation. The eight-hour CO concentrations were assumed to be 70 percent of the modeled one-hour values. One-hour background CO concentrations used were 8.9 ppm for 1995 and 6.1 ppm for 2010. Eight-hour background CO concentrations used were 5.9 for 1995 and 4.1 ppm for 2010. Intersection concentrations correspond to a location approximately 15 feet from the corner of the intersection.

/b/ ppm = parts per million

/c/ Underlined values are in violation of the applicable standard.

NOTE: The State 1-hour CO standard is 20 ppm and the State 8-hour standard is 9 ppm.

SOURCE: Environmental Science Associates

TABLE 45: ESTIMATED VEHICULAR TRAFFIC EMISSIONS

		Emissions in 2010 (lb/day)/a/		
Pollutant	Subarea	No Project	Alternative A	Alternative B
	Fisherman's Wharf	5	51	73
	Northeast Waterfront	16	55	582
	Ferry Building	51	65	56
	South Beach/China Basin	-10	214	966
	Southern Waterfront	5	141	334
CO	**Total**	**77**	**526**	**2,011**
	Fisherman's Wharf	1	12	17
	Northeast Waterfront	4	13	138
	Ferry Building	12	15	13
	South Beach/China Basin	-2	51	228
	Southern Waterfront	1	33	79
NO_x	**Total**	**16**	**124**	**475**
	Fisherman's Wharf	<1	4	6
	Northeast Waterfront	1	5	48
	Ferry Building	4	5	5
	South Beach/China Basin	-1	18	80
	Southern Waterfront	0	12	28
HC	**Total**	**4**	**44**	**167**
	Fisherman's Wharf	<1	1	2
	Northeast Waterfront	0	1	13
	Ferry Building	1	1	1
	South Beach/China Basin	0	5	22
	Southern Waterfront	0	3	7
SO_x	**Total**	**1**	**11**	**45**
	Fisherman's Wharf	0	18	26
	Northeast Waterfront	6	20	211
	Ferry Building	19	24	20
	South Beach/China Basin	-3	77	350
	Southern Waterfront	2	51	121
PM_{10}	**Total**	**24**	**190**	**704**

/a/ Based on EMFAC7F emission rates and an estimated average speed of 35 miles per hour as suggested by the BAAQMD's *Guidelines for Assessing the Impacts of Projects and Plans* (revised April 1993), and an average trip length of 6.6 miles as recommended for the San Francisco Bay Area in the URBEMIS3 model of the California Air Resources Board.

SOURCE: Environmental Science Associates

Alternative represents the future base case for purposes of analysis.) Emissions generated under the No Project Alternative would not exceed the thresholds for any pollutants.

Marine Vessel Emissions

Ship activity is separated into maneuvering, in-port (berthing) and in-transit (cruise) modes. Maneuvering consumes substantially more fuel (and emits more pollutants) than berthing. Vessel calls were estimated for each EIR Alternative and daily average emissions were calculated. Calculated average daily emissions for each of the three scenarios are presented in Table 46.[3] The results in the table indicate that emissions generated under Alternative B (the increment over the No Project Alternative) would exceed the BAAQMD significance thresholds for NO_x, HC, SO_x, and PM_{10}. (CO modeling was not performed for marine vessel emissions because the BAAQMD criterion relates specifically to motor vehicles.) Emissions under the No Project Alternative would exceed the thresholds for NO_x, HC, SO_x, and PM_{10}

The estimates of vessel calls for cargo slips were based on assumptions about the level of cargo shipping activity under each Alternative, which in turn was based on assumptions about the potential for regional shipping activity to reach the levels forecast for the Seaport Plan update and the ability of the Port of San Francisco to capture some of the future growth in shipping (see Appendix D, Assumptions Used in Development of the EIR Alternatives). The estimates of vessel calls for ferry and excursion boats were based on the forecasts of activity in the MTC Regional Ferry Plan and Ferry Terminal Conceptual Design study, existing schedules, and assumptions about the potential for expanded and new excursion boat terminals under each Alternative. (A key assumption is that commute ferry activity will increase substantially with or without implementation of the WLUP.) The estimates of vessel calls for cruise ships were based on existing activity and assumptions about changes in regulations (see Appendix D). Given the many factors that affect the number of vessel calls, the estimates used in this analysis are intended to represent the relative order of magnitude of vessel activity and its relationship to air pollutant emissions. In addition, activity by recreational and fishing boats is not reflected in the analysis, and as a result, emissions (in particular, CO emissions) could be higher than estimated here.

TABLE 46: ESTIMATED DAILY AVERAGE MARINE VESSEL EMISSIONS

		Emissions in 2010(lb/day)/a/		
Pollutant	Vessel Type	No Project	Alternative A	Alternative B
	Cruise Ships	13	13	26
	Cargo Ships	158	158	435
	Tankers/b/	13	13	49
	Ferry/Excursion	869	908	1,051
CO	**Total**	**1,053**	**1,092**	**1,561**
	Cruise Ships	276	276	552
	Cargo Ships	680	680	1,872
	Tankers/b/	54	54	203
	Ferry/Excursion	1,157	1,209	1,400
NO_x	**Total**	**2,167**	**2,219**	**4,027**
	Cruise Ships	5	5	10
	Cargo Ships	273	273	752
	Tankers/b/	13	13	49
	Ferry/Excursion	299	312	361
HC	**Total**	**590**	**603**	**1,172**
	Cruise Ships	1,235	1,235	2,470
	Cargo Ships	1,325	1,325	3,647
	Tankers/b/	112	112	420
	Ferry/Excursion	115	120	139
SO_x	**Total**	**2,787**	**2,792**	**6,676**
	Cruise Ships	40	40	80
	Cargo Ships	77	77	212
	Tankers/b/	6	6	23
	Ferry/Excursion	123	128	149
PM_{10}	**Total**	**246**	**251**	**464**

/a/ Based on EPA published emission rates and methodology used by the BAAQMD in its *1990 Emission Inventory* (*October,* 1993). Assumptions about future cargo and cruise ship activity are presented in Appendix D of this EIR.

/b/ For dry and liquid bulk cargoes.

SOURCE: Environmental Science Associates

Cogeneration Facility

Under Alternative A, a cogeneration power plant would be constructed south of the Islais Creek Channel. A Final Staff Assessment prepared by the California Energy Commission assessed the potential air quality impacts that could result from construction of the facility. PM_{10} is the only criteria emission projected to result in a significant air quality impact from operation of the facility. Feasible mitigation for PM_{10} emission impacts has been identified and, if implemented, would reduce PM_{10} impacts from that facility to a less-than-significant level.[4]

Energy-Related Pollutant Emissions

Estimated 2010 air pollutant emissions from natural gas and electricity consumption under each Alternative (by subarea) are shown in Table 47. These estimates are based upon natural gas and electricity consumption for lighting, space heating, ventilation, space cooling, water heating and miscellaneous office equipment. Estimated emissions from energy use are based on generic land use types and do not account for industrial stationary sources of pollutants other than boilers for space heating. The results in the table show that emissions generated under Alternative B (the increment over the No Project Alternative) would exceed the BAAQMD significance threshold for NO_x.

Total Air Pollutants

Estimated total existing and future (2010) emissions generated by implementation of each Alternative are shown in Table 48, p. 530. The increase in emissions (over the No Project Alternative) under Alternative A would be over the BAAQMD significance thresholds for NO_x and PM_{10}. The increase in emissions under Alternative B would be over the BAAQMD significance thresholds for HC, NO_x, SO_x and PM_{10}. Emissions generated under the No Project Alternative also would exceed the thresholds for those pollutants.

Total air-pollutant emissions would constitute a relatively large portion of the total emissions in San Francisco County. The No Project Alternative emissions would exceed one percent of San Francisco County emissions (the BAAQMD significance threshold) for NO_x and SO_x. Under Alternatives A and B, emissions of NO_x and SO_x would also be greater than one percent of San Francisco Countywide emissions.

TABLE 47: ESTIMATED DAILY ENERGY-RELATED AIR POLLUTANT EMISSIONS, 2010

		Emissions in 2010 (lb/day)/a/		
Pollutant	Subarea	No Project	Alternative A	Alternative B
	Fisherman's Wharf	4	6	6
	Northeast Waterfront	2	-6	-2
	Ferry Building	2	2	4
	South Beach/China Basin	-6	-2	11
	Southern Waterfront	15	35	115
CO	**Total**	**17**	**35**	**134**
	Fisherman's Wharf	23	31	38
	Northeast Waterfront	15	-36	-11
	Ferry Building	8	13	25
	South Beach/China Basin	-38	-14	66
	Southern Waterfront	85	204	677
NO_x	**Total**	**93**	**198**	**795**
	Fisherman's Wharf	1	1	1
	Northeast Waterfront	0	-1	-1
	Ferry Building	0	0	1
	South Beach/China Basin	-1	0	2
	Southern Waterfront	2	6	19
HC	**Total**	**2**	**6**	**22**
	Fisherman's Wharf	1	2	2
	Northeast Waterfront	1	-1	0
	Ferry Building	0	1	1
	South Beach/China Basin	-2	-1	4
	Southern Waterfront	4	9	32
SO_x	**Total**	**4**	**10**	**39**
	Fisherman's Wharf	1	1	1
	Northeast Waterfront	0	0	0
	Ferry Building	0	0	1
	South Beach/China Basin	-1	0	1
	Southern Waterfront	1	3	11
PM_{10}	**Total**	**1**	**4**	**14**

/a/ Emission rates for the combustion of natural gas and electricity generation were supplied in the South Coast Air Quality Management District's (1993) *CEQA Air Quality Handbook*. Emissions are based on changes in land use within each subarea.

SOURCE: Environmental Science Associates

TABLE 48: TOTAL DAILY AIR POLLUTANT EMISSIONS

	Emissions (pounds/day)				Emissions as a Percent of County		
	2010 No Project	2010 Alternative A	2010 Alternative B	San Francisco County	No Project	Alternative A	Alternative
CO	1,147	1,653	3,706	520,000	0.22	0.32	0.71
NO_x	2,276	2,541	5,297	84,000	2.71	3.03	6.31
HC	596	653	1,361	150,000	0.40	0.44	0.91
SO_x	2,792	2,813	6,760	20,000	13.96	14.07	33.80
PM_{10}	271	445	1,182	80,000	0.34	0.56	0.14

/a/ California Air Resources Board, *Emission Inventory* (base year 1991).

SOURCE: Environmental Science Associates

BAAQMD DRAFT GUIDELINES

The BAAQMD Draft CEQA Guidelines include three additional significance criteria for evaluating local plans: consistency with *Clean Air Plan* population and VMT; consistency with *Clean Air Plan* Transportation Control Measures (TCMs); and the provision of buffer zones to mitigate impacts from odors and air toxics.

As described in Section V.C., Environmental Impacts, Population, Housing and Employment, the proposed Alternatives would not result in a population increase in excess of that predicted by the Association of Bay Area Governments and would therefore not exceed values in the *'94 Clean Air Plan* of the BAAQMD. Because the EIR Alternatives (and particularly Alternative B) include uses that could attract regional trips, vehicle miles traveled could increase at a higher rate than the projected increase in population (and as a result could exceed the draft significance criteria). However, such an increase might be minimized or offset by WLUP provisions and mitigation measures that promote transit use.

The WLUP and mitigation measures identified in this EIR (if adopted) include policies and provisions that are consistent with the types of TCMs called for in the '94 Clean Air Plan.

WLUP policies "promote the use of public transit as a primary mode of transportation," and the mitigation measures in this EIR (see Section VI.D., Mitigation Measures, Transportation) include Transportation Demand Management programs, provisions for promoting bicycle use, and measures specifically targeted to the availability of transit service. It appears, then, that the project (with the mitigation measures in the EIR) would satisfy the BAAQMD draft significance criteria with regard to TCMs.

The Draft WLUP does not contain any specific provisions regarding buffers for uses that would emit odors and/or toxics. However, buffers would be provided in the sense that heavier industrial uses would continue to be concentrated in the Southern Waterfront subarea. With regard to potential odor impacts, the BAAQMD Draft Guidelines include a list of 11 uses that have the potential to cause significant odor impacts. None of the new uses allowed by the WLUP are on the BAAQMD list of concern. However, implementation of the WLUP could result in sensitive uses such as residential being located within the BAAQMD "screening distance" for potential odor-creating uses near the Project Area (such as a wastewater treatment plant, or industrial uses such as auto body shops). For such situations, the determination of impact significance depends on whether there have been any odor complaints about the source within a three-year period.

With regard to air toxics, it appears that the WLUP would not allow any uses that would emit "substantial levels of toxic air contaminants." Section IV.F., Environmental Setting, Air Quality, identifies three existing sources of toxic air contaminants in or adjacent to the Project Area. The WLUP would allow residential uses near those sites (e.g., on Seawall Lot 354-I in the Southern Waterfront subarea, and on the Caltrans site in the South Beach/China Basin subarea). Depending on the level of exposure at the specific sites, the development of residential uses at affected locations could exceed the BAAQMD draft significance criteria.

NOTES - Air Quality

[1] Bay Area Air Quality Management District, *Guidelines for Assessing Impacts of Projects and Plans*, November 1985, updated 1991 (available at the Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, California).

[2] Bay Area Air Quality Management District, BAAQMD CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans, Public Draft, December 1995.

[3] The BAAQMD calculates ship emissions based upon the fuel consumption of eight different types of vessels: cargo steamships, cargo motorships, passenger steamships, tanker steamships, tanker motorships, seagoing tugs, inland tugs, and military ships. Of these categories, activity by seagoing tugs and military ships is not typically generated by activities within the Project Area.

[4] California Energy Commission, Final Staff Assessment, San Francisco Energy Company Cogeneration Plant, Application for certification (94-AFC-1), June 1995.

General References

Bay Area Air Quality Management District, *Bay Area '94 Clean Air Plan*, October 1994 (available at the Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, California).

Bay Area Air Quality Management District, *Results from the 1991-92 Pilot Study of Wintertime PM_{10} in the San Francisco Bay Area*, 1992 (available at the Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, California).

Bay Area Air Quality Management District, Base Year 1990 Emission Inventory Summary Report, 1993 (available at the Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, California).

California Air Resources Board, *Emission Inventory,* December 1993 (available at the Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, California).

California Air Resources Board (ARB), *Air Quality Data Summaries*, 1986 - 1993 (available at the Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, California).

G. VISUAL QUALITY AND URBAN DESIGN

APPROACH TO DETERMINING POTENTIAL IMPACTS

The visual quality of the Project Area is defined by the urban design within its subareas as well as the views of and from each subarea. This analysis describes the potential for implementation of the Alternatives to substantially alter the continuity of urban design elements in the subareas or the views therein. The measure of potential impacts is associated with the change from existing conditions, as described in Section IV.G., Environmental Setting, Visual Quality and Urban Design, pp. 216-243. The value of a potential change in visual quality is highly subjective and difficult to measure, especially at the general level of the Waterfront Land Use Plan (WLUP). The impacts discussed below are a measure of the potential change that may result from new or amended policy, and the physical changes associated with the alternative scenarios analyzed in this EIR.

The potential urban design impacts are assessed through an analysis of potential changes in urban continuity. The urban continuity of a subarea may be enhanced or degraded. Changes in view quality can also be assessed through an analysis of potential changes in the views of and from each subarea. Views of prominent man-made or natural features can be either enhanced or degraded from various public vantage points. The obstruction of a visually prominent (man-made or natural) feature from a public vantage point may be considered to have a substantially adverse impact. Alternatively, the opening of views to visually prominent features, if not associated with a substantial break in urban continuity, may be considered a beneficial impact. The reader should note that only "public vantage points" are considered under the visual quality analysis. Examples of public vantage points include parks, public-dedicated piers, and public rights-of-way (such as streets). The subjectivity of visual impacts can be illustrated by an example of demolition of structures which create a substantial break in urban continuity while opening up new views of the Bay. Different individuals will have different opinions about the positive or negative aspects of such an action.

In the context of a plan level analysis and in the absence of knowledge about specific projects that could be proposed and approved under the WLUP, it is impossible to conclude that there could not be substantial adverse changes in urban continuity and/or degradation of publicly accessible views. A substantial adverse change in urban continuity could occur, for example, as a result of demolition of a building of noteworthy aesthetic value. Degradation of publicly accessible views could occur, for example, as a result of construction that would block views of aesthetically important buildings or views of the Bay. Construction of buildings generally perceived to have low aesthetic value might also occur. Conversely, there could be enhancement of urban continuity through new construction, and there could be improved access to existing public views and/or creation of new public views by removal of buildings and/or construction of new access to the Bay. The potential for view blockage is limited by height, bulk, and other building envelope constraints imposed by the City Planning Code. Impacts related to visual quality and urban design would be addressed at a project-specific level upon review of applications for specific development projects.

VISUAL QUALITY AND URBAN DESIGN POLICIES

Proposed Policies and Amendments

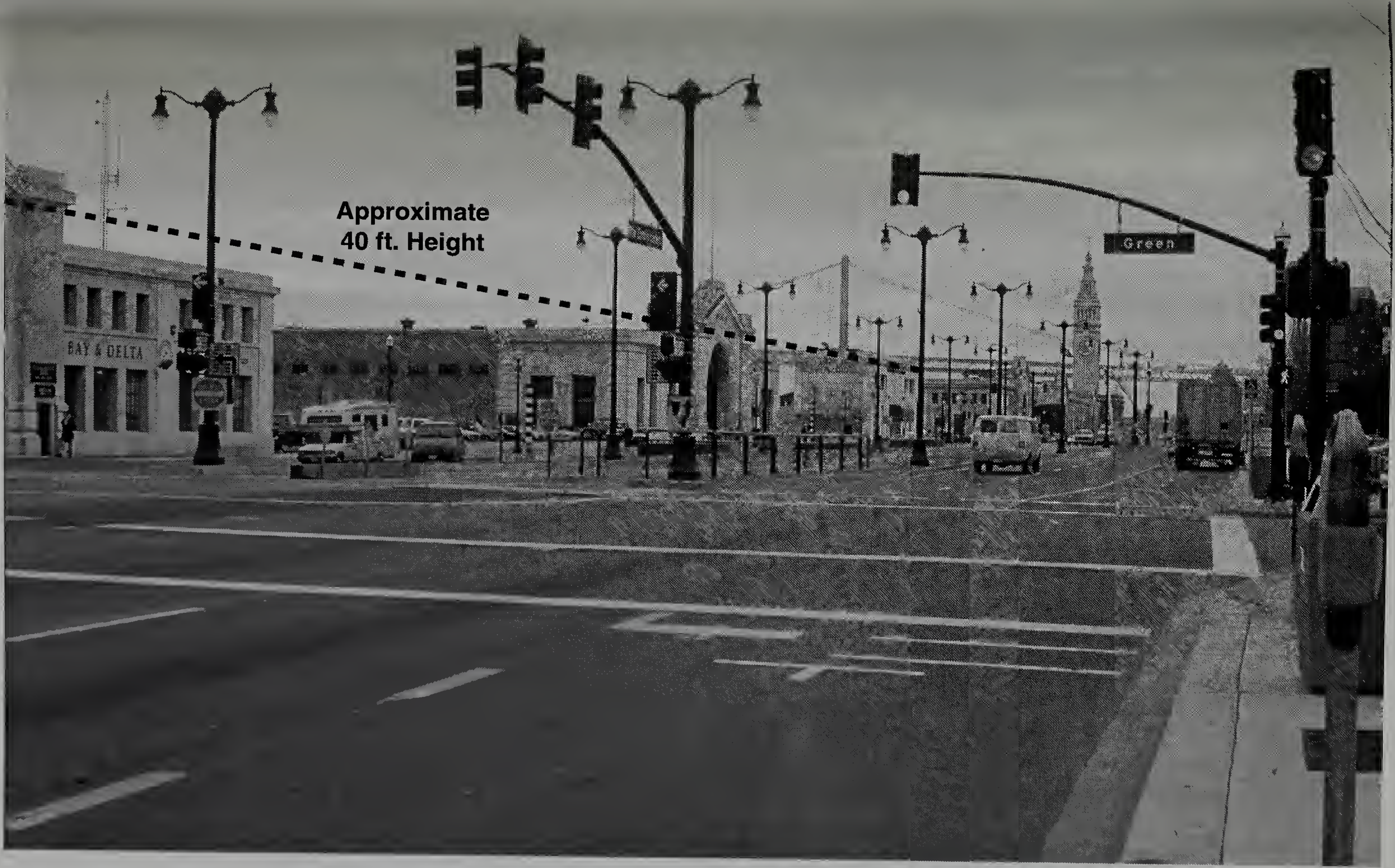
As part of the implementation of the WLUP, amendments would be made to objectives and policies in related public agency plans. Section V.A., Environmental Impacts, Public Plans, Policies, and Regulatory Agencies: Comparison, includes a comprehensive discussion of proposed amendments. The following discussion focuses on proposed amendments that are directly related to potential visual quality and urban design impacts.

Height and Bulk Limits

At this time the Port has not proposed any amendments to existing height and bulk district limits as part of the WLUP. Some amendments to the height and bulk district designations may be identified through ongoing Port planning efforts to further define urban design guidelines for the Project Area. Such future proposals would undergo evaluation to determine whether additional environmental review would be appropriate. Figures 52 and 53, pp. 535-536, show the existing heights allowed for areas within the Northeast Waterfront and South Beach/China Basin subareas. The line drawn in the Figure 52 photo (of pierhead and bulkhead buildings along The Embarcadero) represents an approximation of the 40-foot height limit. The line drawn in the Figure 53 photo (of the view corridor from Harrison Street) represents an approximation of the 84-foot as-of-right height limit along The Embarcadero.

Northeastern Waterfront Plan

The Northeastern Waterfront Plan Objective 2, Policy 4 and Objective 7, Policy 6 would be amended to include the promotion of open space and public access in the waterfront area,

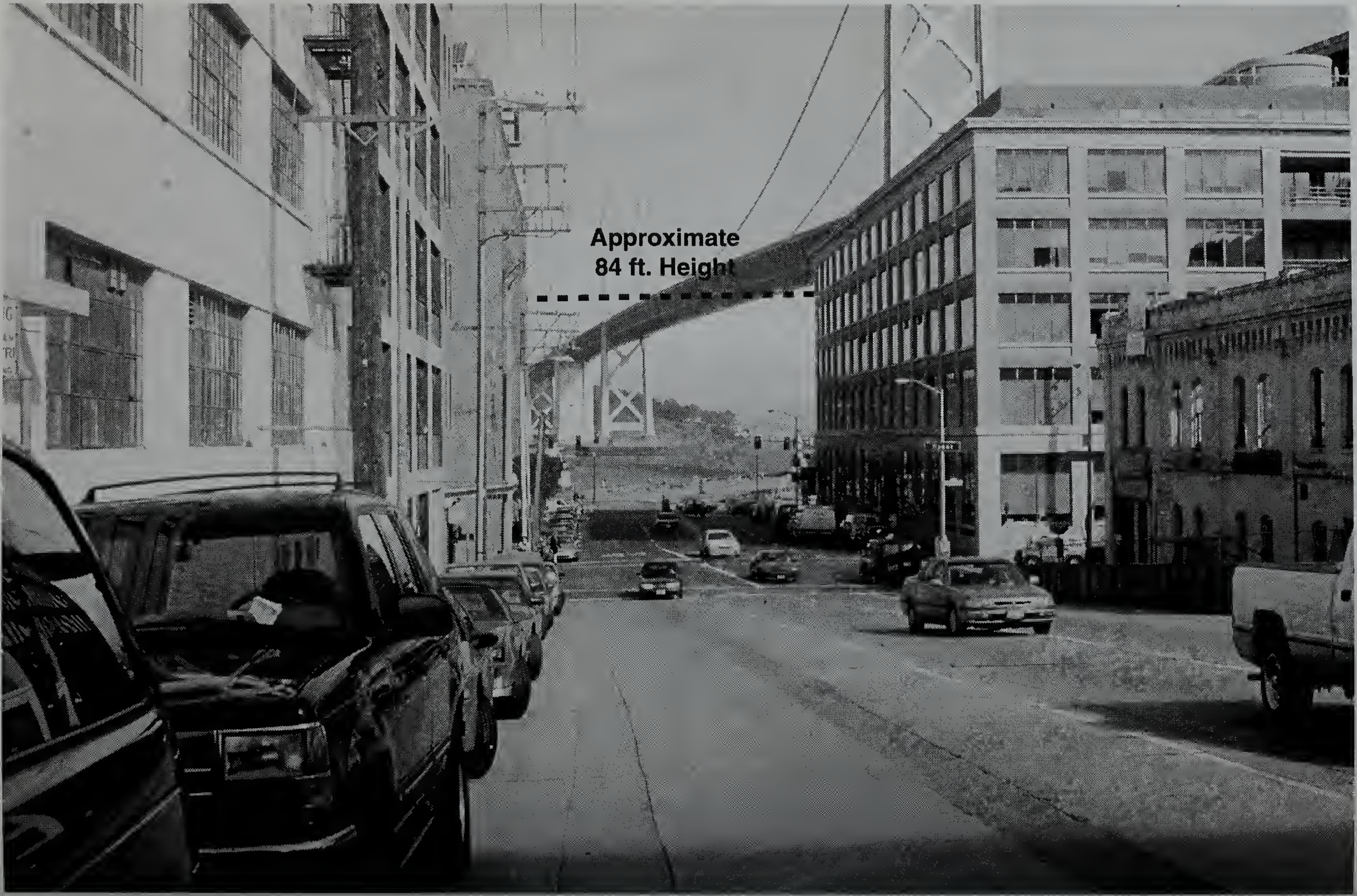


SOURCE: Environmental Science Associates

San Francisco Waterfront Land Use Plan EIR ■

Figure 52

View of Pierhead and Bulkhead Buildings along The Embarcadero (Northeast Waterfront Subarea) with Current Height Limit



SOURCE: Environmental Science Associates

San Francisco Waterfront Land Use Plan EIR ■

Figure 53

View Down Harrison Street (South Beach / China Basin Subarea)
with Current Height Limit

especially for major non-maritime pier developments. This amendment would increase opportunities for visual access to prominent features within and outside of subareas north of China Basin Channel. Amendments to Objective 26 and 26 (a-c) would include new policies for Piers 24 through 28. Proposed amendments (to Objective 26) would preserve views of the Bay Bridge and water views from Harrison Street, and incorporate a policy for improving the shoreline appearance by removing or repairing condemned Pier 24.

City of San Francisco Planning Code

Proposed amendments to the Planning Code would eliminate Section 240.1 criteria from the Planning Commission's conditional use considerations in the Waterfront Special Use District, substituting a general criterion of conformity with the Waterfront Land Use and General (Master) Plans. One of the specific criteria the Planning Commission would no longer consider (in the approval of conditional use permits) includes the provision or maintenance of view corridors along streets into the Bay, and panoramic views. Elimination of the Planning Commission's discretionary approval of conformance with the criteria for conditional uses could weaken protection of view corridors into the Bay, and panoramic views. A waterfront design review process is proposed to replace the current approval process for urban design and public view issues. Adoption of the amendment could result in view blockage from new construction if the waterfront design review process decreased the current protection levels inherent in the discretionary approvals by the Planning Commission. Alternatively, the design review process could result in maintaining existing views if the process provided similar or greater protection than the levels provided at present. Policies to protect views from most streets that end at the waterfront are contained in the Northeastern Waterfront Plan, and are not proposed to be changed.

BCDC Policies

Implementation of the WLUP may require amendments to BCDC policies. Under current BCDC policy, the amount of pier area that can be replaced is restricted and there are associated public access requirements for non-maritime-related uses (for a detailed discussion of BCDC policies, see Chapter III, Project Description, pp. 44-46, and Section IV.A., Environmental Setting, Public Plans, Policies, and Regulatory Agencies, pp. 95-102). For water-oriented commercial, recreation, and public assembly uses, at least 50 percent of the replaced pier area must be dedicated to public recreation, open space, or public access (including open water) under the existing "replacement fill policy" of the Bay Plan. The WLUP proposes expanding the number of water-oriented land use options and the Port may propose that the requirement for public access be reduced below 50 percent (as assumed for EIR Alternative B). Such an amendment to this BCDC public access requirement could result in less of an increase in the required public access area and associated visual access (as reflected in Alternative B) compared with the existing replacement fill policy. The amendment in itself would not reduce any public access areas; the intent of the WLUP is to increase the opportunities for public and associated visual access within subareas. Implementation of WLUP development strategies under all Alternatives would result in a net increase of public access areas and associated visual access.

VISUAL QUALITY AND URBAN DESIGN IMPACTS

Shadow and Wind Impacts

New building development on seawall lots or piers, or development that expands the mass or height of existing buildings, may have impacts associated with shadow and wind. Since the WLUP is a planning level document, specific shadow and wind impacts can be discussed only generally. For example, adverse effects would generally be related to shadow and wind impacts on designated public access areas and vantage points within subareas. The extent of shadows and wind is dependent on building heights and bulks. The City's Planning Code identifies that the building height limit within the majority of the Port's waterfront jurisdiction is 40 feet. A 65- and 84-foot height limit applies to portions of the Northeast Waterfront subarea. The 65-foot height limit includes an area that encompasses Pier 7, which is protected as public open space. In the area between Pier 7 and Pier 1/2, the base height limit is 84 feet with up to 125 feet permissible with conditional use authorization. Similarly, the 84-foot height limit also applies to a portion of the South Beach/China Basin subarea that includes the area just south of the Agricultural Building and the removed Pier 24, with up to 175 feet possible through conditional use authorization.

Were an 84- or 175-foot building to be built at Pier 24, it could generate shadows that could fall on Rincon Park and the Promenade during morning hours. Were a building 84 or 125 feet high to be built in the Pier 1 to Pier 5 area, Pier 7 open space could be shaded. Pier 7, Rincon Park and the Promenade are under the jurisdiction of the Port, not the Recreation and Park Department, and would not be subject to the provisions of the City Planning Code Section 295 (the Sunlight Ordinance). Development of 84- to 175-foot-high buildings at these locations is unlikely given the applicable 4.8 maximum floor area ratio (total occupied floor area limited to

4.8 times the size of the parcel). In addition, existing policies in the Northeastern Waterfront Plan call for low building heights near the waterfront. Furthermore, additional amendments to the Northeastern Waterfront Plan proposed by the Port would preserve views of the Bay Bridge, preserve water views from Harrison Street, and incorporate a policy for improving the shoreline appearance by removing or repairing condemned Pier 24.

Were an 84-foot building to be built in the Ferry Building subarea, shadows from that building could reach Justin Herman Plaza, an open space subject to the Sunlight Ordinance. Any shadowing of that space caused by a new structure exceeding 40 feet in height between one hour after sunrise and one hour before sunset would be assumed to be a significant impact of the WLUP, unless specifically found to be not significant by the City Planning Commission, acting with the advice of the General Manager of the Recreation and Park Department and the Recreation and Park Commission. Under Section 295 of the City Planning Code, any proposed structure over 40 feet in height would be subject to a shadow study to help determine whether shadowing impacts would occur. Development within areas of 40-foot height limits would not be anticipated to have an adverse level of ground-level winds. Erection of buildings that are over 65 feet in height may have an adverse impact associated with wind; the potential height and mass of such buildings could affect ground-level winds in the vicinity of the buildings. As part of project-specific environmental review, the need for a wind tunnel study should be evaluated.

Fisherman's Wharf Subarea

No Project Alternative

Generally, the No Project Alternative involves little change within the subarea. In some places, the No Project Alternative could strengthen or intensify existing land uses in the subarea and affect existing visual quality and urban design elements. Potential changes include the intensification of fishing-related activities on Pier 45 and improved fishing boat berthing and services. These changes would increase the existing fishing-oriented design and visual continuity of the Hyde Street Harbor area. Improved public access and potential pier reconfiguration in the subarea could open additional public views within the subarea. Reconfiguration of some piers could remove visually prominent features, such as the railhead arch at Pier 43. The recently opened Underwater World Aquarium has added to the overall bulk of Pier 39, blocking some previously existing public views, but it has also opened new public vantage point opportunities.

Alternative A

Alternative A includes the impacts described for the No Project Alternative, plus changes related to slightly increased commercial and visitor-serving retail and recreational development. The emphasis of development would be on adaptive reuse of existing structures; such development would be unlikely to result in adverse effects. Development on open seawall lots (generally north of Jefferson Street) to accommodate visitor and specialty retail uses could block views of visually prominent features along the San Francisco waterfront and beyond (i.e., piers, the Bay, the Marin Hills). New and/or improved public access on piers and open land side areas could be provided by new development that would increase the opportunities for public vantage points of visually prominent features within and beyond the subarea. Also, visually distracting elements such as parking lots and clutter could be removed, consolidated or improved by well-designed new development.

Alternative B

Alternative B includes the impacts described for the No Project Alternative plus the most intensive assumed development related to increased commercial and visitor-serving retail and recreational uses. To a greater extent than under Alternative A, development on open seawall lots (generally north of Jefferson Street encompassing the "Triangle") to accommodate visitor and specialty retail could block views of visually prominent features along the San Francisco waterfront and beyond (i.e., piers, the Bay, and the Marin Hills). New and improved public access on piers and open land side areas could be provided by new development that would increase the opportunities for public vantage points of visually prominent features within and beyond the subarea. Also, visually distracting elements such as parking lots and clutter could be removed, consolidated or improved by well-designed new development.

Northeast Waterfront Subarea

No Project Alternative

Generally, the No Project Alternative involves little change within the subarea. In some places, the No Project Alternative could strengthen or intensify existing land uses and have an effect on existing visual quality and urban design elements in the subarea. Potential changes in the subarea include hotel(s), residential units, retail uses, and office space on seawall lots. If well designed, future development of open seawall lots could increase visual continuity of urban design elements west of The Embarcadero. Alternatively, poorly designed, uncoordinated seawall lot development could degrade continuity and overall visual quality. Future development along the east side of The Embarcadero could degrade the visual continuity of pierheads and bulkhead buildings. If one or more bulkhead buildings were opened up or demolished, public views of the Bay could increase, but the change could adversely affect the visual continuity of the pierhead and bulkhead buildings. Some potential uses on the piers include interim warehousing activities and expansion of cruise ship uses. Public views would go largely unchanged, with the exception of more narrow view corridors on streets perpendicular to The Embarcadero (adjacent to developable seawall lots).

Alternative A

Alternative A includes some additional development related to slightly increased commercial, retail, and water-oriented uses. Changes analyzed under Alternative A would include residential units and retail spaces on seawall lots. If well designed, future development of open seawall lots could increase visual continuity of urban design elements west of The Embarcadero. Alternatively, poorly designed, uncoordinated seawall lot development could degrade continuity and overall visual quality. The pier uses in the subarea would undergo change with the assumed relocation of industrial maritime activities, and replacement with public- and visitor-serving uses. To the extent that development involves adaptive reuse of existing structures, such development would be unlikely to result in major visual changes. New development could degrade the visual continuity of pierhead and bulkhead buildings along the east side of The Embarcadero. If one or more bulkhead buildings were opened up or demolished, public views of the Bay could increase, but the change could adversely affect the visual continuity of the pierhead and bulkhead buildings. Public views would undergo change, as there would be the potential for more narrow view corridors on streets perpendicular to The Embarcadero (adjacent to developable seawall lots). If major pier reconfiguration or construction were undertaken to accommodate new uses, public views could be obstructed from vantage points along The Embarcadero and perpendicular streets. At the same time, public open space areas incorporated in new development would increase in accordance with the BCDC replacement fill policies (at least 50 percent of the pier area removed). The resulting increase in public open spaces on these piers would increase public vantage points, allowing more opportunities to view visually prominent features from the subarea.

Alternative B

Alternative B includes the most intensive assumed development related to increased commercial, retail, and water-oriented uses. Changes analyzed under Alternative B would include office and retail spaces, parking, and hotel uses on seawall lots. If well designed, future development of open seawall lots could increase visual continuity of urban design elements west of The Embarcadero. Alternatively, poorly designed, uncoordinated seawall lot development could degrade continuity and overall visual quality. The pier uses in the subarea would undergo change due to the relocation of industrial maritime activities. Relocated activities would be replaced with public- and visitor-serving uses, a new cruise terminal, and/or recreational boating facilities. New development could degrade the visual continuity of pierhead and bulkhead buildings along the east side of The Embarcadero. If one or more bulkhead buildings were opened up or demolished, public views of the Bay could increase, but the change could adversely affect the visual continuity of the pierhead and bulkhead buildings. Public views would undergo change, as there would be the potential for more narrow view corridors on streets perpendicular to The Embarcadero (adjacent to developable seawall lots). If major pier reconfiguration or construction were undertaken to accommodate new uses under this Alternative, public views could be obstructed from vantage points along The Embarcadero and perpendicular streets. Public open space areas would increase in accordance with BCDC replacement fill policies (in more locations, although possibly to a lesser extent at any given location, than under Alternative A). The resulting increase in public open spaces on these piers would increase public vantage points, allowing more opportunities to view visually prominent features from the subarea.

Ferry Building Subarea

No Project Alternative

Generally, the No Project Alternative involves little change within the subarea. In some places, the No Project Alternative could strengthen or intensify existing land uses in the subarea and have an effect on existing visual quality and urban design elements. Potential changes include the planned Rincon Park and restaurant uses on seawall lots. On the pier side, the Ferry Terminal would be expanded, and the Ferry Building itself would undergo rehabilitation and internal reuse. The presence of deteriorating piers could result in associated degradation of the pierhead and bulkhead buildings, due to lack of use and maintenance.

Public views would go largely unchanged, with one exception; Ferry Terminal expansion could cause obstruction of existing narrow view corridors to the Bay on each side of the Ferry Building (as viewed from The Embarcadero). Depending on the design, the expansion of the Ferry Terminal could increase the visual continuity of buildings east of The Embarcadero as it could increase the water-oriented urban development near the Ferry Building. Public vantage points could increase under the No Project Alternative, as the Ferry Terminal expansion would include new public access and walkways and could include a new breakwater with public access linked to the Embarcadero Promenade.

Alternative A

Alternative A includes the impacts described for the No Project Alternative, plus changes related to slightly increased retail, and assembly/entertainment, outdoor recreational uses, and water-oriented development. The WLUP discusses both the "prominence" of pierhead and bulkhead buildings of Piers 1 through Pier 5, as well as the possible removal of some part of existing structures to open up views of the Bay (WLUP, p. IV-32). New development could degrade or destroy the visual continuity of the pierhead and bulkhead buildings along the east side of The Embarcadero, as well as open up new public views of the Bay. The WLUP calls for additional discussion in proposed urban design guidelines that would apply to the subarea.

If major pier reconfiguration or construction were undertaken to accommodate new uses, public open space areas could increase in accordance with BCDC replacement fill policies (at least 50 percent of the pier area removed). The resulting increase in public open spaces on these piers would increase public vantage points, allowing more opportunities to view visually prominent features from the subarea.

Alternative B

Alternative B includes the impacts described for the No Project Alternative, plus changes related to commercial, office, visitor/specialty retail, assembly/entertainment, and water-oriented uses. The WLUP discusses the "prominence" of pierhead and bulkhead buildings of Piers 1 through Pier 5, and indicates the possible removal of some part of existing structures to open up views of the Bay (WLUP, p. IV-32). New development could degrade or destroy the visual continuity of the pierhead and bulkhead buildings with the Ferry Building along the east side of The Embarcadero, as well as open up new views of the Bay. The WLUP calls for additional discussion in proposed urban design guidelines that would apply to the subarea.

Alternative B assumes that piers in this subarea would be physically reconfigured, although it is not known which structures would be affected. Development could exceed the typical building heights and bulks in the Ferry Building area, which could affect the overall character and visual continuity of the area. If major pier reconfiguration or construction were undertaken to accommodate new uses, public views could be obstructed from vantage points along The Embarcadero and perpendicular streets. Public open space areas could increase in accordance with BCDC replacement fill policies (in more locations, although possibly to a lesser extent at any given location, than under Alternative A). The resulting increase in public open spaces on these piers would allow more opportunities to view visually prominent features from the subarea.

South Beach/China Basin Subarea

No Project Alternative

The No Project Alternative would have marginal impacts to existing visual quality and urban design elements. Under this Alternative, no major changes would occur within the subarea and the area of inactive or vacant land would likely increase. Some warehousing activities could increase in the subarea, and fishing and ship repair activities would consolidate within other subareas. The continued presence of deteriorating piers could result in some degradation of the visual quality of those structures. With the exception of ongoing improvements at the South Beach Park, public views and vantage points in the subarea would go unchanged. The overall visual discontinuity of buildings south of China Basin Channel would remain.

Alternative A

Alternative A would include development on some or all currently vacant seawall lots, and assumes different intensities of development pressure on these sites and adjacent piers. Impacts would be related to slightly increased residential, office, local-serving retail, water recreation, assembly/entertainment/recreation and interim warehouse and light industrial developments.

Visually important resources in the South Beach/China Basin subarea include pierhead and bulkhead buildings at Piers 26, 28, 38, and 48, and the Fireboat House/Pier 22½. All of these resources, with the likely exception of Pier 48, would be at risk from development pressures. On the east side of The Embarcadero, the "presence" of pierhead buildings at Piers 26, 28, and 38 is acknowledged by the WLUP, along with the desire to "adapt" them "into new pier uses, if feasible and unless otherwise indicated by the urban design and historic preservation guidelines."

Also, new "high quality design" is called for in "new structures on other Piers" (p. IV-52 of the WLUP). A specific development standard (p. IV-53) calls for preservation and renovation of pierheads on Piers 26 and 28 (again, "if feasible" and "unless otherwise indicated" in the proposed urban design plan). No such standard addresses the pierhead at Pier 38.

Because the area south of the Ferry Building includes so few remaining pierheads, bulkheads and pier sheds, substantial alteration or demolition of one or more of the remaining pierhead and bulkhead buildings could affect the overall visual character of the South Beach/China Basin subarea. Development that degraded the visual continuity of residential/retail buildings along the west side of The Embarcadero could also occur. In the South Beach area, pier reconstruction and/or reconfiguration might block existing public views of the Bay from The Embarcadero and perpendicular streets. At the same time, new public views could be created. South of China Basin Channel, the same pier-related impacts would apply to areas along Terry A. Francois Boulevard.

Alternative B

Alternative B would include development on some or all currently vacant seawall lots, and assumes the most intensive development on these sites and adjacent piers. In the South Beach area there would be an increase in assembly/entertainment/recreation uses, wholesale trade/promotion uses, and hotel uses. South of China Basin Channel there would be an increase in cargo shipping activities and water-oriented uses.

As discussed above for Alternative A, the WLUP recognizes the significance of urban design elements in the South Beach/China Basin subarea. Because the area south of the Ferry Building includes so few remaining pierheads, bulkheads and pier sheds, substantial alteration or demolition of one or more of the remaining resources could affect the overall visual character of the subarea. New development could degrade the visual continuity of residential/retail buildings along the west side of The Embarcadero. In the South Beach area, pier reconstruction and/or reconfiguration could block existing public views of the Bay from The Embarcadero and perpendicular streets. At the same time, new public view areas could be created. South of China Basin Channel, the same pier-related impacts would apply to areas along Terry A. Francois Boulevard.

Southern Waterfront Subarea

No Project Alternative

The No Project Alternative would generally have marginal impacts to existing visual quality and urban design elements. Some cargo shipping uses in the subarea would be reactivated. Public views and vantage points would go unchanged. The overall visual discontinuity associated with the mix of industrial and commercial buildings and structures in the subarea would remain unchanged.

Alternative A

Alternative A includes the impacts described for the No Project Alternative, plus some changes related to increased cargo shipping, warehousing, and general industrial development. Supporting development would include maritime support and local retail uses. In addition, this Alternative assumes that a cogeneration power plant would be located on a portion of Seawall Lot 344. Related uses exist in the subarea. The proposed cogeneration plant might erect infrastructure similar in height to the existing PG&E power plant. Views of the waterfront from surrounding hills and residential areas would be affected. No changes are anticipated that would affect public views from the Warm Water Cove Park or Pier 98.

Reuse of historic buildings and warehouses on Twentieth Street, at Illinois Street, and the adjacent Pier 70 could compromise the overall character of this historically defined district if substantial alterations were necessary. Sensitive, well-designed reuse could preserve and enhance these resources. The description of the Pier 70 Mixed Use Opportunity Area in the WLUP recognizes that "the preservation and adaptive reuse of the historic Union Iron Works buildings will pose a considerable challenge" (p. IV-70), and development standards propose permitting non-maritime land uses "that result in preservation and adaptive reuse" of the buildings, and respect "the work-a-day qualities of the industrial setting" (p. IV-71).

Alternative B

Alternative B includes the impacts described for the No Project Alternative, plus some changes related to increased cargo shipping, warehousing, and general industrial development. Other development would include office, warehouse retail, research/development, maritime support and local retail uses. Adverse impacts related to such development would likely be minimal as related uses already exist in the subarea. No changes are anticipated that would affect public views from the Warm Water Cove Park or Pier 98.

Reuse of historic buildings and warehouses on Twentieth Street, at Illinois Street, and the adjacent Pier 70 could compromise the overall character of this historically defined district if substantial alterations were necessary. Sensitive, well-designed reuse could preserve and enhance these resources. The description of the Pier 70 Mixed Use Opportunity Area in the WLUP recognizes that "the preservation and adaptive reuse of the historic Union Iron Works buildings will pose a considerable challenge" (p. IV-70), and development standards propose permitting non-maritime land uses "that result in preservation and adaptive reuse" of the buildings, and respect "the work-a-day qualities of the industrial setting" (p. IV-71).

H. BIOLOGICAL RESOURCES

IMPACTS OF ALL ALTERNATIVES

All Subareas

Short-Term Effects on Aquatic Resources

Under all Alternatives, and in each of the project subareas, it may be necessary to repair/replace pier structures and/or dredge the areas to accommodate anticipated development. The aquatic environment could be affected by any temporary changes in local water quality brought about by dredging, pier replacement, and changes in non-point runoff patterns and characteristics. The EIR Alternatives involve development scenarios requiring varying amounts and locations of dredging and pier replacement. The specific analysis of the effects that would result from each Alternative (including discussion of the effects within various subareas) is presented at the end of this Impacts section, pp. 556-559. A general discussion (on which further analysis is based) of the short-term effects on aquatic organisms that could result from these activities is described below.

Dredging and/or pier replacement could cause the suspension of the fine particulate matter contained in the bottom sediments into the water column which, in turn, would elevate local turbidity levels. The degree of turbidity would vary substantially with the quantity and duration of the activity, and would depend also on the type of equipment used, quality of equipment and care of the operator. In all cases, the increased turbidity levels would be relatively short-lived and generally confined to within a few hundred yards of the activity. After initially high turbidity levels, sediments would disperse and background levels would be restored within hours of disturbance. The particulate materials associated with the turbidity would likely cause short-term disruption of feeding and respiration of resident invertebrates and of fishes unable to avoid or remove themselves from the area.[1] While some fish would die because of dredging, it is not likely that substantial fish kills would result because most individuals would remove themselves from the area as dredging activities begin.

Dredging and/or pier replacement could bring about short-term effects on the benthic (sea bottom) environment. Some benthic organisms could be buried or displaced during actual construction or dredging. However, as the total habitat area disturbed would be very small, (in comparison to the benthic environment surrounding the disturbed area) organisms would soon repopulate the affected area and habitat would recover quickly.

Under most conditions, fisheries in the Project Area would not be substantially affected by these activities. Turbidity plumes would be dispersed within a matter of hours and the particulate concentrations would be diluted to levels that would pose no major threat to most fishes. Permitting agencies (e.g., BCDC) do not allow dredging during herring spawning season. The Port schedules maintenance dredging to avoid this December to March period. If extensive repair to pilings were to occur during the peak spawning season of Pacific herring (December to March), there could be local disruption of that fishery, a significant impact. Herring deposit large masses of eggs on aquatic vegetation and hard substrates such as rip-rap and pilings. Because of the adhesive nature of the surface of these eggs, clay particles, such as those suspended in the water column after dredging, stick to the eggs. Thus, the eggs are susceptible to smothering during high turbidity periods. Hatched fry are susceptible to smothering by fine suspended particulates during periods of high turbidity levels because the particulates can cause gill abrasion, clogged gills, and suffocation. Loss of both eggs (roe) and fry could potentially reduce herring populations and reduce future catches for an indefinite period. Removal of piers and pilings could eliminate sites for egg deposition.

Contaminants associated with (bound to) the suspended sediments also could degrade water quality by reducing dissolved oxygen concentrations in the water column and leaching contaminants from the sediments. Substantially depressed oxygen levels (i.e., below 5.0 milligrams per liter (mg/l) may cause respiratory stress to aquatic life, and levels below 3.0 mg/l may cause acute mortality.[2] However, oxygen levels are not expected to remain low for long periods, for two reasons. First, tidal flushing would be expected to ameliorate depressed oxygen levels by introduction of oxygenated water into the Project Area. Second, dredging of anoxic (oxygen-poor) sediments would proceed for a short period of time. In summary, it is likely that nearby aquatic life would experience respiratory stress from dredging and pier replacement, but high mortality is not expected to result from depressed oxygen levels.

Some contaminants could be released from the sediments and become biologically available to organisms in the water column. The extent of their availability and impact to the biota would depend on ambient water conditions at the time of release and the biological conditions of the target organisms. Potential impacts could include direct mortality or non-lethal physiological effects such as damage to reproductive or respiratory organs. In addition to water column mpacts, there is the potential for bottom-dwelling organisms to bioaccumulate contaminants from the sediments. More definitive analysis of the effects to the aquatic community resulting from any release of contaminants from the sediments would require toxicological testing.

Provisions for this type of testing are included in U.S. Army Corps of Engineers testing procedures for Section 404 discharges (Clean Water Act). These tests or similar ones would be required prior to issuance of dredging or fills permits.

Creosote is a material that has been historically used to treat wooden structures placed in the water to slow disintegration of the structure. Due to the potential effects of toxic materials leaching from such treated wood, there is currently a State-wide moratorium on the use of creosote in the building or replacement of pier structures. As a result, new pier structures within the Project Area would likely use wood treated with a different substance, or concrete or plastic. Therefore, potential impacts from the use of creosote would not be expected to occur.

Pier replacement could cause direct short-term impacts due to loss of substrate habitat provided by the piers themselves. The habitat would be reestablished if the piers were replaced, thereby avoiding long-term significant impacts. Impacts would be further reduced by mitigation presented in Section VI.H., Mitigation Measures, Biological Resources, p. 653.

Pier repair/replacement and/or dredging would need to be carried out in compliance with the requirements of several statutes and regulations related to biological resources. Table 49 outlines the regulatory authorities and likely permit requirements for Waterfront Land Use Plan (WLUP) activities that could affect biological resources.

Long-Term Effects on Aquatic Resources

New fill into the Bay, for purposes of the WLUP, could be in the form of new pier facilities, or it could be engineered fill. New fill may be accompanied by removal of existing fill, pursuant to BCDC policies and practice, and so net changes in fill that could occur under the WLUP are impossible to quantify. New pier facilities provide valuable substrate for encrusting organisms such as barnacles, algae, sponges, anemones, etc. Decking can also provide habitat value (e.g., places for hiding and feeding). Large amounts of new fill (both piers and engineered fill) could have long-term effects on aquatic habitat, by decreasing habitat (open waters or shoreline) from the Bay and/or affecting Bay water quality and flow patterns. Placement of new fill could cause the reduction of surface waters and overall water volumes. Impacts could also result from shadowing of the area below new piers, lowered oxygen levels, and decreased or changed tidal flushing. Although net changes in fill are impossible to quantify at this time, no long-term water quality effects (and associated biological impacts) related to placement of fill are expected,

TABLE 49: SUMMARY OF AGENCY REGULATORY AUTHORITIES AND JURISDICTIONS AND LIKELY PERMIT REQUIREMENTS RELATING TO BIOLOGY AND WATER QUALITY

Agency - Permit/Action	Statutory Authority and Jurisdictional Scope	Waterfront Land Use Plan Activity for Which Permit/Action May Be Required
U.S. Army Corps of Engineers (Corps) - Section 10 / 404 - permit authority	Sections 301, 402, and 404 of the Clean Water Act - Section 301 prohibits the discharge of any pollutant without a permit. Section 402 sets up the permit program, and Section 404 gives the Corps direct authority over proposed discharges of dredged or fill material into waters of the United States, including wetlands, up to the high tide line, the ordinary high water mark, or the limit of wetlands. Section 10 of the Rivers and Harbors Act - The Corps regulates activities in navigable waters of the United States, subject to the ebb and flow of the tide (up to mean high water) and/or has historically been used, is currently used, or may be used in the future for interstate or foreign commerce. Section 10 jurisdiction includes filled, drained, diked, or developed lands that at one time were navigable (e.g., undeveloped lands below mean high water behind dikes in San Francisco Bay).	Any activity involving discharge of dredged or fill material, which could include dredging, pier replacement, wetland restoration and construction in wetlands.
San Francisco Bay Conservation and Development Commission - Review and Concurrence	McAteer-Petris Act (1965) - BCDC has jurisdiction over all areas of San Francisco Bay subject to tidal action, and a shoreline band extending 100 feet inland. BCDC also has jurisdiction over salt ponds, managed wetlands, and certain other waterways.	Any activity involving discharge of dredged or fill material, which could include dredging, pier replacement, wetland restoration and construction in wetlands.

(Continued)

TABLE 49: SUMMARY OF AGENCY REGULATORY AUTHORITIES AND JURISDICTIONS AND LIKELY PERMIT REQUIREMENTS RELATING TO BIOLOGY AND WATER QUALITY (Continued)

Agency - Permit/Action	Statutory Authority and Jurisdictional Scope	Waterfront Land Use Plan Activity for Which Permit/Action May Be Required
State Lands Commission - Leasing Authority	Public Trust Doctrine - The State acquired sovereign ownership of all tidelands and submerged lands and beds of navigable water ways upon its admission to the United States in 1850. The State Lands Commission manages these resources for the public trust. Submerged lands and tidelands are still subject to the public trust (management by SLC) even if filled or diked.	Any activity involving discharge of dredged material.
Regional Water Quality Control Board - Review and Certification	Porter - Cologne Water Quality Act (State) and Sections 301, 401, 402, and 404 of the (federal) Clean Water Act - These sections of the act require that the discharge of dredged or fill material into waters of the United States does not violate State water quality standards. Applicants for Section 404 or Section 10 permits must obtain a certification from the State.	Any activity which could affect water quality, including dredging, pier replacement, wetland restoration and construction in wetlands.
US Fish and Wildlife Service (USFWS) - Endangered Species Act Section 7 Consultation/Permit	Federal Endangered Species Act - This act gives USFWS responsibility for insuring that any action authorized, funded, or carried out by a federal agency is not likely to jeopardize the continued existence of threatened or endangered species or result in destruction or adverse modification of such species.	Any activity which could adversely affect federally threatened or endangered species in the jurisdiction of USFWS, which could include activity in wetlands (if the wetlands are found to contain such species).
National Marine Fisheries Service (NMFS) - Endangered Species Act Section 7 Consultation/Permit	Federal Endangered Species Act - See above. The National Marine Fisheries Service has jurisdiction over anadromous marine and non-marine fish.	Any activity which could adversely affect federally threatened or endangered species in the jurisdiction of NMFS, which could include pier replacement and dredging (during breeding season and/or in the habitat of such species).

(Continued)

TABLE 49: SUMMARY OF AGENCY REGULATORY AUTHORITIES AND JURISDICTIONS AND LIKELY PERMIT REQUIREMENTS RELATING TO BIOLOGY AND WATER QUALITY (Continued)

Agency - Permit/Action	Statutory Authority and Jurisdictional Scope	Waterfront Land Use Plan Activity for Which Permit/Action May Be Required
California Department of Fish and Game (CDFG) - Consultation	California Endangered Species Act - This act gives the CDFG responsibility for protection of State-listed threatened and endangered species.	Any activity which could adversely affect State threatened or endangered species, which could include activity in wetlands, demolition of abandoned buildings (if the wetlands or buildings are found to contain such species), pier replacement and dredging (during breeding season and/or in the habitat of such species).

SOURCE: Environmental Science Associates, 1995

assuming that fill is placed in accordance with federal, State, and regional regulations. (See Section V.J., Environmental Impacts, Hydrology and Water Quality, for a discussion of water quality impacts.) Changes brought about by new fill would not be substantial in relation to the overall Bay benthic environment. Thus, it is not expected that discernible changes to the overall benthic environment would occur. Specific projects may require additional environmental review when project design details are defined.

New engineered fill would have to meet Corps of Engineers requirements which regulate source and thus make-up of fill. These regulations limit harmful substances that might otherwise be found in imported fill. The placement of fill in the Bay is also subject to Bay Conservation and Development Commission approval, as discussed in Section IV.A., Environmental Setting, Public Plans, Policies, and Regulatory Agencies, p. 95.

Current BCDC replacement fill policies (assumed for the No Project Alternative and Alternative A) would limit the extent of pier replacement to less than the pier area being removed. Therefore, pier replacement under the EIR Alternatives could result in a net loss of substrate habitat over time. Without specific information regarding the timing and location of this habitat removal, it is difficult to accurately assess the impact to biological resources. However, if removal is phased over time and along the entire Project Area, impacts would be incremental and limited and would therefore not be significant.

Long-term impacts from increased nonpoint run-off (stormwater runoff) could occur due to development and an increase in less pervious (paved) surface area (this would happen in the Southern Waterfront subarea, the location of most existing unpaved areas). Increases in paved areas would result in decreases in absorption rates, alteration of drainage patterns, an increase in the amount of surface run-off and added pollutants in surface run-off as a result of the pavement and often as a result of land uses on those pavements. Most commonly, paved areas can bring about increased levels of oil and grease (largely from vehicle operation) which can be harmful to aquatic resources. Individual land uses may involve specific pollutants that if allowed to enter the Bay could also be harmful to these resources. Examples include wash water from facility cleaning, particularly boat cleaning, and maintenance materials which can include detergents and organic tin compounds such as tributyltin (now banned, but found on older boats) that are toxic to marine life. Also many types of land uses involve chemical handling that could result in an accidental spill. Overall these impacts are not expected to be significant. Additional information regarding the significance of this impact can be found in Section V.J., Environmental Impacts, Hydrology and Water Quality, pp. 584-585, and in the Alternatives discussion at the conclusion of this section on pp. 556-559.

Potential Effects on Bats

The Project Area is within the range of two bat species, Yuma myotis and Townsend's western big-eared bat, the latter a California Species of Special Concern. Abandoned buildings could provide habitat for these species. Under all Alternatives, these buildings could be renovated or demolished. Significant impacts to the Townsend's western big-eared bat would include take of individuals and/or their winter and/or nursery roosting habitats.

Fisherman's Wharf Subarea

Effects on Sea Lions

The marina area of Pier 39 where the population of sea lions has historically established would generally be left unchanged under all Alternatives. However, under all Alternatives, the subarea could become a more use-intensive area with the partial removal of some piers, the addition of transient berths, and the possible addition of historic ships (under Alternative B). Depending on the location of these changes, increased boat traffic or access by people in proximity to these animals could adversely impact the sea lion population at Pier 39. Refer to the Hyde Street Harbor EIR, 93.574E, available from the San Francisco Planning Department.

Other Impacts

All Alternatives are assumed to include the proposed Hyde Street Harbor project, which would include pier reconstruction and dredging. As discussed previously, these activities could result in some short-term effects on aquatic resources. The partial removal of some piers and addition of transient berths could also result in short-term effects.

Northeast Waterfront Subarea

There would be no activities common to all Alternatives that would cause impacts to biological resources in this subarea.

Ferry Building Subarea

The activities common to all alternatives within this subarea include the ferry terminal project, the renovation of the Ferry Building, and a new breakwater/access pier along the Embarcadero Promenade. The construction of ferry barges for the ferry terminal project would cause the short-term impacts related to pier construction and dredging discussed earlier in this section. Construction of the new breakwater/access pier would also cause short-term impacts, but over he long term would provide additional substrate habitat. The new breakwater in this subarea could change flow patterns and tidal flushing and thus result in scouring impacts to benthic habitat. As discussed under Long-Term Effects on Aquatic Resources, p. 550, these impacts are not expected to be significant.

South Beach/China Basin Subarea

There would be no activities common to all Alternatives that would cause impacts to biological resources in this subarea.

Southern Waterfront Subarea

Effects on Wetlands

In all Alternatives, restoration and public access are planned for the existing wetland at Pier 98. However, all Alternatives would also involve some level of increased cargo shipping activity in the direct vicinity of this wetland and the Seawall Lot 352 wetland. Impacts to this wetland would occur primarily due to contaminated runoff from these adjacent activities and/or from uncontrolled access resulting from people wanting to view the wetlands. Compliance with the regulatory statutes listed in Table 49 also would be required for restoration or other activities in the wetland area at Pier 98 and/or at Seawall Lot 352. With regard to this area, it should be noted that this EIR does not assume creation of a new container terminal on Seawall Lot 352, as is contemplated in the *Seaport Plan* and analyzed in the *Seaport Plan* Environmental Assessment.

IMPACTS OF THE NO PROJECT ALTERNATIVE

As discussed previously, the major impacts to biological resources would occur from dredging and pier replacement. Implementation of the No Project Alternative would not require substantial dredging and/or pier replacement; thus impacts from these activities would be minimized. It is expected that approximately four acres of new fill for water-dependent uses and five to seven acres of "replacement fill" could occur under this Alternative within the entire Project Area. Not all the four acres of water-dependent fill would be net new fill due to BCDC practice of requiring at least partial offsetting removal of fill. The "replacement fill" area would be smaller than the existing piers or docks replaced per BCDC policy. This amount of fill compares with the six acres of new fill that has been placed along the waterfront in the 15 years 1976-1991, and the 36 acres of fill removed during the same time. This new fill would not be likely to result in long-term significant adverse impacts, as the amount of fill would be small relative to the entire waterfront, and it would be placed in areas of somewhat degraded habitat.

Activities that could result in impacts due to dredging and fill placement include expansion of the existing cruise terminal in the Northeast Waterfront subarea, and additional water recreation uses in the South Beach/China Basin subarea. Impacts from the deterioration of existing (especially unused) facilities could also occur. These impacts would include loss of habitat substrate as piers deteriorate. The amount of substrate loss is likely to be relatively small, and so the impact would not be significant. The South Beach/China Basin and Southern Waterfront subareas in particular would have unused (or underused) pier facilities under the No Project Alternative.

Impacts could occur from pollutants due to increases in stormwater runoff, if development under the No Project Alternative includes increases in paved surfaces. Impacts could also occur if development does not include upgrades to the stormwater collection infrastructure (meaning that the runoff from the new development could flow directly into the Bay). For additional details regarding these issues, refer to Section V.J., Hydrology and Water Quality, pp. 583-599.

IMPACTS OF ALTERNATIVE A

Implementation of Alternative A would require more dredging and pier replacement than the No Project Alternative, but substantially less than Alternative B. It is expected that approximately four acres of new fill for water-dependent uses and 42-65 acres of "replacement fill" could occur under this Alternative within the entire Project Area. Not all of the four acres of water-dependent fill would be net new fill due to BCDC practice of requiring at least partial offsetting removal of fill. The "replacement fill" area would be smaller than the existing piers or decks replaced, per BCDC policy. This amount of fill compares with the six acres of new fill that has been placed along the waterfront in the 15 years, 1976-1991, and the 36 acres of fill removed during the same time. This new fill would not be likely to result in long-term, significant adverse impacts, as the amount of fill would be small relative to the entire waterfront and the fill would be placed in areas of somewhat degraded habitat.

Impacts to biological resources under Alternative A could include those discussed above regarding deterioration of existing facilities as well as some impacts from dredging and pier construction and replacement (discussed elsewhere in this section). Impacts from dredging and pier construction (in addition to those that could occur under the No Project Alternative) could result from additional ferry and excursion uses in the Fisherman's Wharf subarea, mixed-use development and excursion uses in the Northeast Waterfront subarea (and the relocation of some cargo shipping uses from the Northeast Waterfront to the Southern Waterfront), mixed-use development in the Ferry Building subarea, and a new cruise terminal and mixed-use development in the South Beach/China Basin subarea.

Because many of the uses under Alternative A would be interim uses that involve adaptive re-use of existing structures, it is likely that the stormwater collection infrastructure would not be upgraded (and runoff from new development could flow directly into the Bay). Given this scenario, impacts also could occur from pollutants due to increases in stormwater run-off, if development under Alternative A includes increases in paved surfaces. To the extent that existing piers are replaced under Alternative A, there could be net decreases in impervious surfaces, because BCDC policies require that less than the area of the original pier be replaced. For additional details regarding these issues, refer to Section V.J., Environmental Impacts, Hydrology and Water Quality, pp. 584-585.

IMPACTS OF ALTERNATIVE B

Alternative B assumes more potential land uses involving dredging and pier replacement and/or construction than either the No Project Alternative or Alternative A. In addition, pier replacement under Alternative B is assumed to potentially involve replacement of a greater proportion of the existing pier than is currently allowed by the BCDC pier replacement policies. It is expected that approximately 13 acres of new fill for water-dependent uses and 77-97 acres of "replacement fill" could occur under this Alternative within the entire Project Area. Not all of the 13 acres of water-dependent fill would be net new fill due to BCDC practice of requiring at least partial offsetting removal of fill. The "replacement fill" area would be smaller than the existing piers or decks replaced, per BCDC policy. This amount of fill compares with the six acres of new fill that has been placed along the waterfront in the 15 years, 1976-1991, and the 36 acres of fill removed during the same time. Although this amount of fill is greater than the new fill that would occur under the No Project Alternative and Alternative A, it is still a relatively small amount of fill relative to the entire waterfront area. The amount of fill and the fact that it would be placed in areas of somewhat degraded habitat, indicate that this new fill would not be likely to result in adverse impacts.

Impacts from dredging and pier construction (in addition to those that could occur under the No Project Alternative and Alternative A) could result from additional transient berths and historic ships in the Fisherman's Wharf subarea (as well as the assumed "full build-out" of the proposed

Fisheries Center at Pier 45); mixed-use development and a new cruise terminal in the Northeast Waterfront subarea; mixed-use development, excursion boat facilities, and historic ships in the Ferry Building subarea; mixed-use development, excursion boat facilities, public access, recreational boating, and cargo shipping in the South Beach/China Basin subarea; and mixed-use development, recreational boating, and cargo shipping in the Southern Waterfront subarea. Alternative B also assumes a substantial increase in the level of maritime activity (and in particular, cargo shipping activity), and over the life of the project, additional dredging would be needed at a number of piers to maintain the necessary depths for ships.

Because many of the uses under Alternative B would be new uses that would require pier replacement or substantial upgrading, it is likely that the stormwater collection infrastructure would be upgraded (and runoff from new development would not flow directly into the Bay). If development does not include upgrades to the infrastructure, impacts could occur from the runoff from new development and from increases in stormwater run-off, if development under Alternative B includes increases in paved surfaces. To the extent that existing piers are replaced under Alternative B, there could be net decreases in impervious surfaces, because less than the total original pier area might be replaced (although the proportion would likely be greater than under Alternative A). For additional details regarding these issues, refer to Section V.J., Environmental Impacts, Hydrology and Water Quality, pp. 584-585.

Under Alternative B, it is assumed that the establishment of approximately 22 acres of wetlands proposed by the Mission Bay Plan would be accomplished by the year 2010. These wetlands are planned for land at the mouth of China Basin Channel. Areas adjacent to this planned wetland would be fully utilized for cargo shipping and ship repair activities. Impacts to this wetland could occur due to contaminated runoff from these adjacent activities and/or uncontrolled human encroachment; however, these impacts should be avoided through implementation of mitigation measures required for the Mission Bay project.[3] With termination of the Mission Bay Development Agreement at the end of 1995, development of wetlands is uncertain. If the wetlands are not developed, then impacts from nearby industrial maritime uses would not occur.

NOTES - Biological Resources

[1] Pequegnat, W.E. An Assessment of the Potential Impact of Dredged Material Disposal in the Open Ocean. U.S. Army Engineers Waterways Experiment Station. Technical Report D-78-2. Chief of Engineers, U.S. Army, Washington, D.C., 1978.

[2] U.S. Environmental Protection Agency. Quality Criteria for Water 1986. Office of Water Regulations and Standards, Washington, D.C. EPA 440/5-86-001, 1986.

3 For example, see Objectives and Policies of the *Mission Bay Specific Plan* (particularly Objectives 15, 35, and 44), part of the San Francisco General (Master) Plan.

I. GEOLOGY, SOILS AND SEISMICITY

IMPACTS OF ALL ALTERNATIVES

All Subareas

Damage from Settlement

Use of existing structures and infrastructure, as well as new development under all Alternatives, would be subject to damage from mass settlement and differential settlement of weak soils present throughout the Project Area. Almost all of the lands in the Project Area have soils subject to substantial settlement when loads are placed on them. The weak and compressible nature of the Bay Mud and the unpredictable performance of artificial fill create conditions that provide poor support for structures and infrastructure. There are three types of settlement that would be expected to affect structures on Port lands: (1) immediate settlement, (2) consolidation settlement, and (3) differential settlement.

Immediate Settlement. Immediate settlement primarily affects structures with shallow foundations and fill. Settlement would begin as soon as a load is placed on these materials because the soil would be deformed by the extra weight. This type of settlement would occur rapidly, often mostly happening during construction of a new structure with a shallow foundation and during the placement of fill; effects on pile-supported structures would be expected to be mostly minor. However, immediate settlement also might occur if there is a change in the load of an existing building. Additions to existing buildings or new uses of an existing building that increase the load might result in immediate settlement. When immediate settlement occurs, it also would have the potential to affect adjacent structures if the soil is deformed and moves laterally. This type of settlement is due both to compaction (air voids are removed) and compression (water is removed) when the load is placed on the soil. It also could damage buried pipelines. In weak soils, like Younger Bay Mud and some fills, if too great a load is applied too rapidly, the soil may fail.

Consolidation Settlement. For new construction under the WLUP, consolidation settlement would begin when a load is placed on a soil subject to compression (and compaction), and would continue indefinitely over time. Consolidation settlement would occur in saturated or near-saturated soil, as is present in the mud under much of the waterfront. It is caused by the increase in pore fluid pressure, which is defined as excess pore pressure. The excess pore pressure causes the pore fluid to be expelled from the soil matrix. As the pore fluid is forced from the soil, the increased load is transferred to the soil particles, compressing them together. The amount of consolidation would depend on the compressibility of the soil and the magnitude of the applie load. Consolidation settlements occur in clay and non-clayey soils, but the rate of consolidati settlement would depend on the soil permeability. The permeability of non-clay soils, such as sandy fill, is relatively high, and therefore, the consolidation settlement would occur rapidly. Clay-rich soils, like the Bay Mud, have small pore spaces and, therefore, it would take a longe time for the excess pore pressure to dissipate as the water is extruded out of the soil. Consolidation settlement would occur indefinitely, but mostly would occur relatively soon aft the load is placed on the soil. The duration would depend on the thickness of the consolidatin soils and the drainage path. The consolidation would continue to decrease over time, eventual reaching a rate that would be so small as to be of no significance for engineering of a new structure or of minor potential to further damage an old structure.

As most of the settlement would occur relatively soon after load placement, a hazard would ex t when a heavy load is placed too rapidly on soft soils. Rapid loading on saturated soils could induce high pore pressures in the voids in the soil and inhibit the soil from developing the she strength required to prevent failure. It is generally recognized that the load carrying capacity Bay Mud depends on the rate of loading. Upon loading, the mud bulges or is plastically deformed and flows laterally (producing a "mud wave" or a landslide under the nearby Bay) while the load site sinks. For this reason, a common practice where space and time allow is to place added weight (usually soil) on the soil to speed up the process of settlement, a practice known as "surcharging." After the settlement has achieved a rate that is within acceptable engineering standards, the surcharge fill is removed, and the structure is constructed, thereby avoiding the large settlement that otherwise would soon follow construction. Changing the lo of a structure automatically alters the rate of consolidation and rapid heavy loading may have soil failure with a similar mud wave effect.

Soils rich in organic material also have a high potential for settlement because the organic material may decay over time. The Bay Mud, particularly the soft Younger Bay Mud, has a hi amount of organic material that adds to its poor bearing characteristics.

Predicting the rate of consolidation settlement is difficult and depends on numerous factors including the soil characteristics, clay and organic content, permeability, existing degree of consolidation, arrangement and types of soil layers in the soil profile, depth and compressibilit of the mud, height and fluctuation of the water table (the top of the saturated zone), drainage p and other geologic factors, as well as predicted density and height of the fill and weight and foundation system of the proposed structure. Even the best estimates are not always accurate, and mis-estimated amount and rate of settlement could result in severe damage to structures.

Differential Settlement. Differential settlement is the uneven settlement of a structure because of the variable compression of soils on a site. It is caused by differences in soil types (e.g., composition and density), differences in thickness of soil layers, differences in soil properties and differences in the loads placed on the soil. Soils with variable composition, permeability and moisture content are not uniform in their response to a load. This is particularly problematic in the Project Area because so much of the property comprises old fills of highly variable and unknown composition that were placed on the Bay Mud. Substantial differences in these materials over a short space on a site creates marked differences in compaction and compression settlement when a load is placed on the fill. For example, buildings occupying an extensive area on fill 10 to 15 feet in thickness and overlying 50 to 60 feet of mud could anticipate differential settlements in the range of 6 to 12 inches.[1] Some consolidation and compaction of the fill and mud has occurred over the many years since the old fills were placed; however, the combination of decaying organic material and non-organic materials of considerable size variation makes for conditions of unpredictable and ongoing continued settlement. Any new load applied to these soils might induce a variable and unpredictable amount of settlement. Differential settlement potentially is highly damaging to buildings and other structures with foundations that bear on soils with variable compressibility.

In addition to variable settlement of a structure, one of the chief problems for both structures and infrastructure is the differential settlement between pile-supported structures and adjacent structures and infrastructure supported on footings bearing on fill. Because the pile-supported structures settle less than an adjacent structure or infrastructure, as the ground surface settles away from the building, entrances and ramps to the building break away and sink to lower elevations and underground pipes break their connection to the building. Attempts to correct the problem by adding more fill to an entrance ramp serve only to induce more settlement by increasing the load. This is as much a problem for road surfaces as it is for buildings, especially where roads cross soils that settle differentially.

All buildings, structures and infrastructure in the Project Area are subject to potential settlement and differential settlement. New construction that is not supported by piles would be subject to the most substantial potential settlement, with most of the settlement generally occurring in about the first decade of a structure's design life. However, new construction methods are bett able to engineer the soils and the foundations to minimize the hazards to the structures over th full design life than methods that were available at the time the old buildings and structures w built. For this reason, although many of the old buildings may already have settled a substanti amount, continued settlement (even though decreasing) might result in substantial further damage to those buildings sufficient to render them unsafe.

Settlement also could be problematic for new uses on existing piers involving substantial load increases, as from reconstruction. The pier piles would carry the load. On the other hand, if t new uses were to involve equal or lighter loads than at present, then the hazard of additional settlement would be avoided. This is because most of the piers are old and most of the settlement that would be caused by existing loads likely has occurred. If new uses were likely create substantial load increases, then new piles or reinforcement of existing piles may be required by BCDC and/or the Port of San Francisco to ensure that settlement is within accepta limits and to ensure seismic load requirements.

One of the chief settlement-related problems, particularly in the waterfront area, is the creatio of mud waves when loads are placed too rapidly on compressible and deformable soils. Substantial evidence exists of plastic flow of Bay Mud under the sea wall toward the Bay after the old fills were placed in the waterfront.[1] While most of this movement probably was achie by the late 1930's, it could be reactivated by an earthquake.[1] In 1975 and 1976, a mud wave w created in the India Basin area during placement of heavy concrete material on the fill at Pier A related hazard is the inducement of a landslide under the Bay because of the plastic flow of mud. The hazard would be present where dredging has steepened the slope of the mud line. T creation of a mud wave in the Bay poses particular hazards for maritime activity. Removal of mud wave would be problematic, given the costs and the current delays in obtaining permits fo dredging and dredge spoil disposal. Mud waves could also be set up on land, posing potential hazards to existing buildings, roads, surface and buried infrastructure, rail lines and other features.

Damage from Soil Readjustment

Construction of below-grade and underground facilities poses significant potential hazards of damage from soil heave (or rebound) such as buoyancy heave and excavation stability. The so saturated soil in the Project Area would create particular problems for underground constructio because of the buoyant characteristic of the soil. Open underground structures (e.g., a parking garage) potentially could "float up" toward the ground surface, inducing substantial damage to the structure. This type of flotation problem was encountered during construction of the BART tube and Embarcadero Station. A similar problem could be encountered if underground parking were constructed at Pier 45 or other earth-filled piers.

Somewhat similar to the flotation problem noted previously is the tendency of soft deformable materials to move laterally toward open pits and sub-grade open structures. The design of sub-grade open structures (e.g., underground parking structure) would have to include provisions to resist the lateral forces exerted on the walls by the deformable soils wherever they are present. As no such structures have been completed in the Project Area, there is little previous experience with this, although temporary sub-grade construction encounters the same problem. Construction for the Muni Metro Turnaround at The Embarcadero near Mission Street has progressed without significant reported damage to structures and infrastructure. The general tendency of the soil to move laterally toward a free face requires special pit wall support structures to prevent a collapse of the pit wall. Such collapse could result in significant damage to nearby buildings, roads, and surface or buried infrastructure.

Damage from Subsidence (Excavation and Dewatering)

Construction requiring excavation and dewatering could result in nearby subsidence that might damage nearby structures and infrastructure. Excavation for foundations and sub-grade levels of buildings in the soft saturated soil of the Project Area often involves dewatering. Dewatering may be the temporary extraction of soil water before and during excavation of an open pit, or it may be a long-term method of keeping sub-grade portions of structures dry (e.g., underground parking areas). Dewatering would have the potential to result in consolidation of the soft fill and mud with the result that the ground surface might subside. Subsidence would have similar effects to settlement on adjacent buildings, roads, infrastructure and other features. The impact would be particularly hazardous to older buildings with shallow foundations, as compared to new structures and those with pile support. The subsidence could result in cracking of foundations, buildings leaning out of plumb, slanting of floors, cracks in walls, distortion of door jambs and window frames, bending of interior plumbing systems, breaking of buried pipeline and utility connections to buildings, discordant connections of building entrances, cracking and damaging of street and sidewalk surfaces, bending and breaking of buried utility lines and water and sewer mains, damage to retaining walls and other impacts. These impacts are of special concern where structures already have some distress imposed by prior settlement; subsidence from dewatering could compromise the structural integrity as well as damage the non-structural interior elements and the cosmetic features of the buildings. Some of the old buildings may have historic value (see Section IV.N., Environmental Setting, Historic Architectural Resources, pp. 324-336); damage of this type could result in the need for substantial repair or possibly even demolition of those structures.

Vibration from Pile Driving

Vibration from pile driving for pier pile replacement or upgrading for building foundation support could result in settlement of adjacent soils and damage nearby properties. Substantial pile driving might be required for new structures constructed at seawall lots and for pier substructure reconstruction. Pile driving induces ground vibration that could result in compaction and compression of artificial sandy fill and settlement of the adjacent ground surfaces. In general, the settlement probably would be minor and local in effect, as most of the fills and mud have already undergone a good deal of compaction and compression since being placed. However, in areas where adjacent buildings are located very near the pile driving site, potential settlement could result in some damage to those structures, particularly if they are not pile-supported and are old. Buried pipelines, some of which are probably also quite old, also could be damaged by the vibration and soil settlement.

Damage from Lateral Soil Movement (Dredging)

Dredging activities to support ship berthing would alter the underwater topography (bathymetry) and possibly expose Port facilities to damage from lateral soil movement. The Setting (Section IV.I., pp. 248-269) presents summary information about the bottom depth of the Bay at piers. The Port maintains dredge depths of between 30 and 38 feet at certain maritime facilities along the waterfront, including Piers 45, 35, 27-29, 30-32, 38, 48, 50, 70, 80, 90, 92, and 94-96. All Alternatives would include berthing of ships, particularly in the Southern Waterfront subarea, but also possibly in the Northeast Waterfront subarea. Under all Alternatives, new dredging might be required in addition to permitted maintenance dredging to provide access to facilities that are not part of the current dredging program or to increase dredge depths near certain piers to accommodate deeper draft ships. New dredging (referred to as "new work" by the U.S. Army Corps of Engineers) could extend a substantial (undefined) distance out from the U.S. Pier Head Line (the line beyond which piers may not extend into the Bay) of the Port into

San Francisco Bay to accommodate large ships.[2] Maintenance dredging would be required for all berthing along piers and quays.

Dredging by intent alters the bottom bathymetry, and most such adjustments would be relatively minor in effect on the Bay sediments and bathymetry. Large-scale dredging has the potential to alter the bathymetry sufficiently to change currents and sediment transportation processes in the Bay. All dredging involves a disposal problem that must be dealt with on a case-by-case basis. Persistent problems with mounding of dredge material disposed near Alcatraz have created a navigational hazard in that area in addition to water quality problems (see Section IV.J., Environmental Setting, Hydrology and Water Quality, pp. 270-292). Dredging also has the potential to induce an adjustment of the Bay Mud to the new bathymetry. This could result in either subsurface slips of mud into the dredged channel and/or the lateral movement of Bay Mud toward the dredged bottom surface. In most cases this probably would be a minor adjustment that at worst would be a temporary navigational hazard. However, the deeper the channel dredging, the greater the hazard that it could induce subsurface mud slips and lateral movements, particularly in earthquakes, that could damage the adjacent quays, piles, breakwaters, and other facilities.

Hazards from Demolition

All Alternatives could involve the demolition of existing structures. Some of the structures have sub-grade levels and foundations that might pose a hazard to life safety and potentially might weaken adjacent properties. Removal of piles and pier substructures also might induce settlement of soils.

Demolition of old buildings would have potential impacts on the life safety of workers and passersby as well as impacts on noise, air quality, and ground vibration (it is assumed that explosives would not be used in demolition). Demolition also might leave large pits (former basements and other sub-grade structures) and buried infrastructure that could pose a hazard to life safety. In addition, open pit walls could be weakened by demolition activity and could result n collapse of the wall and adjacent soil. Old buildings in the Project Area constructed with masonry that is in a weakened condition, especially where brick and mortar were used for the foundation and basement walls, would be susceptible to this type of damage. These buildings may be susceptible to collapse, especially in earthquakes. Such collapse could damage adjacent structures. Pile removal at dilapidated piers could induce soil settlement as fluid muds fill the voids. This type of settlement likely would be fairly local in effect.

Earthquake Hazards

Under all Alternatives, an increased number of people would be exposed to the severe earthquake hazards of the waterfront. All the other impacts described in this section have the potential to be locally damaging and disruptive to Port facilities, but an earthquake has the potential to render the entire Port inoperable and halt uses on seawall lots.

All Alternatives, including the No Project Alternative, include some provision for growth of business, industry, residential and tourist-oriented uses within the Project Area. The lands within the Project Area represent some of the highest earthquake hazard zones in the City, and therefore, pose high risks to people living, working and visiting in those areas. The hazard is derived in large part from the soils of the area, which have a poor performance history in past earthquakes, and the high probability that a major earthquake will occur in the Bay Area during the next 30 years (see Section IV.I., Setting, pp. 259-264). Most of the hazard to people, however, is posed by the potential collapse or damage to buildings. There are numerous old buildings in the Project Area which do not meet current design standards for seismic performance and, in consequence, may be expected to undergo significant damage and possibly collapse with attendant risk to life-safety. Most buildings constructed prior to 1976 and which have not been retrofitted to meet current seismic design standards probably would not perform well in earthquakes. Unreinforced masonry structures of this type (there are five such structures within the Project Area) would be especially prone to collapse in a major earthquake. New construction might be expected to perform better in large earthquakes, but the hazards could not be entirely eliminated, even with rigorous enforcement of current building codes.

Ground shaking presents the most widespread hazards to structures and infrastructure because all parts of the Project Area could be affected by it. However, ground shaking would be highly variable in intensity and type from one site to another because of the way geologic materials respond to earthquake vibrations. In addition, the effect of ground shaking on structures would be related to the form and massing, foundation type, structural design, materials, construction quality and location relative to other structures. Much like the strings of a guitar, each structure has a unique set of natural frequencies at which it vibrates when disturbed by a transient load such as earthquake. The energy delivered by an earthquake to a building is strongly related to the natural frequency of the structure. To characterize these effects, engineers analyze the response of structures with different natural periods to specific earthquake ground motions; these are termed *acceleration response spectra.*

Since 1976, the Building Code in California has incorporated standard response spectra as a basis for structural design. The response spectra establish the minimum strength for which a building must be designed. The Uniform Building Code with California Amendments (UBC) takes into consideration seismic forces and general considerations of site soil type. The UBC, however, considers primarily lateral forces in its design requirements. Vertical forces are currently being considered for incorporation into the code design requirements, as observations made in recent earthquakes (e.g., the 1994 Northridge Earthquake and the 1995 Kobe Earthquake) suggest that greater vertical motions were measured than had been considered in structural designs. The objective of the UBC is to protect the life safety of building occupants and the public. Therefore, the UBC does not include provisions that are sufficient to prevent damage to buildings in a large earthquake. The UBC presumes damage and relies upon some allowable damage to control shaking within the structure. For large earthquakes, the UBC primarily ensures that the building will not collapse, but some structural and non-structural damage may be expected.

In most cases, buildings constructed prior to the 1970s would not meet current design provisions of the UBC for earthquake forces. Following the 1971 Sylmar (San Fernando) Earthquake, major revisions were made in 1976 and 1988 to the seismic provisions of the UBC and other building codes. Modern construction provides a good level of protection from collapse for most site conditions. Most of the severe damage to buildings in the 1989 Loma Prieta Earthquake and 1994 Northridge Earthquake (and others) occurred in older buildings constructed prior to the 1970s.[3,4] The most severe hazards are presented by unreinforced masonry buildings constructed f brick or concrete block (which can no longer be constructed in San Francisco under the uilding Code). Under the strong intensity of ground shaking expected in a large earthquake in he Project Area, many of these old structures could be expected to collapse or undergo sufficient amage to be "red-tagged" (required to be demolished). For this reason, most Bay Area ommunities, including San Francisco, have programs for identifying buildings of this onstruction type. Each building must be assessed as to whether it can be retrofitted to meet the equirements of the San Francisco Unreinforced Masonry Building Ordinance (Ordinance No. 25-92). Other older building types of steel or concrete framing that were not designed to resist arthquake vibrations could also be severely damaged. Older reinforced brick and masonry structures could also be heavily damaged in large earthquakes; the extent of hazard would depend on individual construction and specific site hazards. In contrast, light wood-frame and sheet metal buildings would be expected to have moderate damage in most conditions. Steel-frame structures designed to resist earthquake vibrations have an excellent record in earthquakes.

For new construction and most rehabilitation, the Port of San Francisco follows the San Francisco Building Code (the Uniform Building Code with California and San Francisco Amendments). In addition to following the San Francisco Building Code, projects that require a BCDC permit may be required to obtain approval from BCDC's Engineering Criteria Review Board (ECRB). The ECRB is empowered to establish and revise safety criteria for structures (such as piers) or other types of fills on top of Bay mud or for structures on fill that have already been placed over Bay Mud. The ECRB reviews all except minor projects for specific safety provisions, makes design recommendations, prescribes inspection systems to ensure placement of fill according to approved designs and gathers performance data from specific development projects. The ECRB's activities are intended to complement the functions of local building departments which may not be adequately staffed to review projects involving soils inspections and other aspects of engineering design for fill conditions.

The 1994 UBC, released in early 1995, has not yet been officially adopted in California, although adoption may occur in the near future. Table 50 identifies the expected damage levels to newly constructed buildings from ground shaking of moderate and large earthquakes. While these estimates represent general conditions in UBC Seismic Zone 4, they may be reasonably extrapolated to San Francisco, which is located in that zone. The estimates projected here specifically apply to buildings constructed to the requirements of the 1991 UBC. However, the Earthquake Engineering Research Institute notes that the damage ranges in Table 50 would apply to all UBC editions from 1976 through 1994.[5]

Buildings of special occupancy are required to meet more stringent design requirements than the UBC. These include hospitals (which must meet the State's Title 24 requirements, as specified by the Hospital Seismic Safety Act), schools (under requirements of the Field Act), and other structures that are important to protecting health and safety in the community such as fire stations. The Waterfront Land Use Plan (WLUP) allows for the development of community facilities on some sites in the Project Area; community facilities include, but are not limited to, fire and police stations and health care facilities.

TABLE 50: PERCENTAGE OF BUILDINGS EXPECTED IN EACH DAMAGE STATE FOR VARIOUS SHAKING INTENSITIES FOR BUILDINGS DESIGNED UNDER THE 1991 UNIFORM BUILDING CODE

Earthquake Magnitude							
6.0 - 6.5	7.5 - 8.0	Expected	Percent of Buildings Expected in Each Standardized Damage State				
Distance to Fault		MMI	None	Slight	Moderate	Extensive	Complete
30 mi.	50 mi.	VII	60 - 90%	10 - 40%	1 - 5%	<1%	0
5 mi.	40 mi.	VIII	35 - 60%	35 - 45%	10 - 30%	<5%	<1%
1 mi.	30 mi.	IX	25 - 40%	25 - 40%	20 - 40%	3 - 10%	<2%
--	3 mi.	X	5 - 25%	5 - 25%	40 - 70%	10 - 30%	<5%

Standardized Damage States:

None and *Slight* - No damage or minor damage to non-structural elements; only incidental hazard.

Moderate - Primarily non-structural damage; also could be minor non-threatening structural damage; remote chance of life-threatening situation from structural elements.

Extensive - Extensive structural and non-structural damage; localized life-threatening situations would be common.

Complete - Complete collapse or damage that is not economically repairable; life-threatening situations in every building of this category.

MMI = Modified Mercalli Intensity

SOURCE: Earthquake Engineering Research Institute, *Expected Seismic Performance of Buildings*, prepared by the EERI Ad Hoc Committee on Seismic Performance, Oakland, California, February 1994.

Refurbished buildings also would be subject to potential damage. Table 51 presents anticipated damage to old unreinforced masonry buildings (constructed between 1870 and 1935) and seismically strengthened in accordance with the requirements of the Uniform Code for Building Conservation (UCBC). Similar projections have not been made for other types of old structures; however, it is likely that refurbished buildings meeting the UCBC probably would perform at east as well, and likely better than, refurbished unreinforced masonry structures. The Port is not equired to use the UCBC because the City of San Francisco has not adopted it; however, it has been used in appropriate cases and is available for such use in the future.

TABLE 51: PERCENTAGE OF BUILDINGS EXPECTED IN EACH DAMAGE STATE FOR VARIOUS SHAKING INTENSITIES FOR UNREINFORCED MASONRY BUILDINGS REHABILITATED UNDER THE UNIFORM CODE FOR BUILDING CONSERVATION

Earthquake Magnitude		Expected MMI	Percent of Buildings Expected in Each Standardized Damage State				
6.0 - 6.5	7.5 - 8.0						
Distance to Fault			None	Slight	Moderate	Extensive	Complet
30 mi.	50 mi.	VII	40 - 60%	20 - 40%	10 - 20%	2 - 10%	<1%
5 mi.	40 mi.	VIII	15 - 25%	15 - 25%	20 - 30%	25 - 35%	2 - 10%
1 mi.	30 mi.	IX	2 - 10%	5 - 15%	25 - 35%	40 - 60%	5 - 15%
--	3 mi.	X	<1%	2 - 10%	10 - 20%	50 - 70%	15 - 25%

Standardized Damage States:

None and *Slight* - No damage or minor damage to non-structural elements; only incidental hazard.

Moderate - Primarily non-structural damage; also could be minor non-threatening structural damage; remote chance of life-threatening situation from structural elements.

Extensive - Extensive structural and non-structural damage; localized life-threatening situations would be common.

Complete - Complete collapse or damage that is not economically repairable; life-threatening situations in every building of this category.

MMI = Modified Mercalli Intensity

SOURCE: Earthquake Engineering Research Institute, *Expected Seismic Performance of Buildings*, prepared by the EERI Ad Hoc Committee on Seismic Performance, Oakland, California, February 1994.

Injuries and non-structural damage could also be great in the Project Area. Non-structural damage could cause as many casualties as those from structural failures. Because of the high amplification of earthquake waves in Bay Mud, it is expected that substantial vibratory motions would be established in all buildings and structures in the area. Mid-rise buildings would be especially affected by the low-frequency waves, which would set up wave resonance in the structures. Such buildings would experience considerable swaying (assuming that they are designed to have structural flexibility). These vibrations would induce considerable non-structural damage such as breaking of pipes, movement of furniture and panels, failure of suspended fixtures and ceilings, toppling of shelving units, jamming of elevators, and other effects. Structural and/or non-structural damage could leave fire sprinkling systems inoperative, increasing the hazard of fire.

In sum, under all Alternatives, the Project Area can be expected to experience a high number of casualties and a great concentration of severely damaged buildings after a large earthquake. To the extent that new construction, seismic retrofitting of old buildings, and removal of dilapidated and unsafe buildings occurs under each of the Alternatives, the relative severity of the impact would be further reduced; to the extent that each Alternative attracts more residents, workers, and visitors to the Project Area, the relative exposure to seismic effects would be greater. However, under any alternative and scenario for a maximum probable earthquake (or maximum credible earthquake like that in 1906), the expected casualties and damage would be substantial.

Mitigation Measures (see Section VI.I, p. 655) would reduce the hazards of an earthquake to an acceptable level of risk, within the context of seismically active San Francisco. Earthquake hazards could not be entirely eliminated, however, and both Alternative A and Alternative B would therefore result in significant effects related to earthquake hazards that could not be fully mitigated, by exposing increased numbers of persons to substantial danger in an earthquake. Alternative A would involve greater resident population and more occupancy of older buildings that would not be seismically strengthened, compared to Alternative B. Alternative B would involve less residential population but much greater visitor and employee population, although hose visitors and employees would generally occupy safer, newer buildings, compared to Alternative A. The No Project Alternative would result in less residential development, less employment growth, and substantially fewer visitors to the Project Area than would either Alternative A or Alternative B.

Safety Hazards from Hazardous Materials

n the event of an earthquake, people could be exposed to safety hazards related to hazardous materials on some sites within the Project Area. Section IV.M., Environmental Impacts, Hazards nd Hazardous Materials, pp. 312-323, discusses the potential risks of upset under normal onditions in the Project Area. Potential effects of the Alternatives specifically related to arthquake safety hazards associated with hazardous materials are addressed below.

Some specific risks during an earthquake would be related to hazardous materials handled and stored on-site at industrial sites, research and development facilities, warehouses and storage sites, and at piers. Storing a wide variety of hazardous materials, such as hazardous chemicals (including pressurized gases), biohazardous materials, and radioactive substances (such as those used in medical and research laboratories, which could occur as part of a research and development use allowed by the WLUP), individually and in proximity to other hazardous substances with which they could interact, could result in substantial damage, injuries or casualties if the materials were released in response to ground-shaking effects or building failure.

The California Division of Occupational Safety and Health requires that large quantities of chemicals be stored in low, well ventilated locations, with reactive chemicals stored separately. The State Fire Marshal requires that if fume hoods are used in laboratories, a back-up power supply be provided to ensure proper ventilation in the event of a power outage.

Substances could be released during a moderate to large earthquake by container and pipe breakage and spills. Chemicals, in particular, could react with each other and the environment and be transferred through walls, windows and floors in buildings and escape containers in railroad cars and railroad tankers and on ships. Explosion and fire would also be major concerns in laboratories during and following earthquakes. Spills of hazardous materials are a common hazard of recent California earthquakes, as have been identified in an extensive study by the Association of Bay Area Governments.[6] The report summarizes the types of problems that can be encountered during an earthquake and the types of actions that can be taken to minimize potential consequences.

Effects on Emergency Response Services

Access to the Port likely would be impaired and life-line services could be cut off during a major earthquake, thereby impairing effective emergency response services. Buildings, roadways and parking structures in the Project Area could be severely damaged from ground shaking and earthquake-induced ground failure. Liquefaction of sand layers in the subsurface and/or differential settlement could result in loss of support for structures and their collapse onto streets, and the cracking and upheaving of surface pavements. Earthquake damage to buried infrastructure could result in loss of power, water and communications. Rupture of gas lines could result in an explosion or fire. Differential settlement and displacements of buried infrastructure from ground failures could break water lines that provide sprinkler protection for fires within buildings and also cause washouts or "sink holes" in streets, rendering them impassable. The potential loss of critical life-line services of power, water and communications would significantly impair emergency response operations.

A recent investigation of liquefaction hazards in a maximum credible earthquake (8.3 Richter magnitude on the San Andreas Fault, similar to the 1906 Earthquake) estimated significant damage and numerous breaks of pipelines in both the Auxiliary Water Supply System (AWSS) operated by the San Francisco Fire Department exclusively for fire-fighting purposes and the Municipal Water Supply System (MWSS) operated by the San Francisco Water Department to supply both drinking water and fire-fighting needs.[7] This damage would likely render both systems temporarily inoperable following the earthquake, and very expensive repairs would be required to restore service. Most significantly, the report concluded that neither system will have water pressure available for fire fighting immediately following the earthquake, nor will drinking water be available. Damage to the sewer system also will be extensive, leaving the area without sewer service for some time after the earthquake.

The Project Area would have some advantage for alternative access by water. The availability of ferry service proved especially critical in the aftermath of the 1989 Loma Prieta Earthquake. Increased ferry service has been established since 1989, and the WLUP would support further increases. Additionally, two fireboats, which can pump Bay water using a portable hose system, could be used to fight fires in much of the Project Area. Also, the Port has installed standpipes for obtaining Bay water for fire fighting, which will be partly effective in fire control after an earthquake. In 1989, the City's one fireboat proved highly valuable in suppressing fires in the Marina District (a second fireboat was subsequently added). However, these beneficial aspects of the Plan would depend on the stability of the piers themselves. Were the piers to collapse, access to ferries and to the fire boats could be lost following an earthquake.

Damage to Docks and Wharves

n a major earthquake, much of the Port's maritime operations probably would be rendered noperable because of potential damage to docks and wharves. Because of the poor soils and ructural conditions of some foundations in the Project Area, there is a high potential of failure uring an earthquake.

Violent ground shaking is expected during a major earthquake. Liquefaction and lateral spreading are likely to occur in many areas of the Port. Estimates of earthquake liquefaction-induced settlement could be on the order of 3 to 24 inches. Movements of these magnitudes would damage roadways, utilities, and structures that gain support from potentially liquefiable soil, such as the Embarcadero Roadway. Structures that are not designed to resist forces established in current codes could be damaged from ground shaking, settlement and lateral loads.

The 1995 earthquake in Kobe, Japan, devastated that city's port area, rendering it inoperable for months.[8] The geologic conditions at the Port of Kobe bear some similarities to the Port of San Francisco. Most of the port of Kobe is constructed on fill overlying soft alluvial sand soil that liquefied in the earthquake.[9] The liquefaction resulted in both extensive settlement (up to three meters) and lateral spreading of three or more meters along the sea walls (these figures are substantially higher than is anticipated for the Port of San Francisco, as noted in the Setting).[9] Old fills performed poorly; recent engineered fills performed better, but not with adequate results.[9] Ground shaking intensity was rated as X to XI on the Modified Mercalli Intensity Scale (similar to what is anticipated for a maximum credible earthquake affecting San Francisco).[9]

The anticipated impacts of a maximum probable earthquake in the Project Area may be analogous in kind to those observed in Kobe, although the intensity generally may be lower; the effects of a maximum credible earthquake would be more likely to equate to the intensity observed at Kobe. Therefore, some of the key observations at Kobe are summarized here briefly. The worst industrial damage in Kobe was at the Port where ground failures, notably liquefaction, lateral spreading and settlement occurred.[9] The secondary earthquake effects caused the collapse and failure of quays with failure of caisson walls, which caused the most substantial damage to the port. Gantry cranes on the quays were severely damaged by buckling of legs and crossbeams, and some cranes collapsed. In the older parts of the port, piers were severely damaged by massive soil settlements; large parts of piers were submerged. Numerous warehouses and other facilities were submerged and/or severely distorted. Rail lines became twisted and broken; roads were cracked and sank. Container and other operations of the Port of Kobe were essentially halted by the earthquake, which severely hindered the emergency response operations from outside the area. It was several days before ferry service could be restored. It was noted that while the direct damage to the port was severe, the loss of port service to the local economy was devastating.[10] Pile-supported structures generally performed well, whereas older heavy concrete industrial buildings probably on mat foundations tilted. Elevated highway and bridge structures supported by piles underwent strong shaking that exceeded their capacity, resulting in tilting, and lateral movements of the piers contributed to collapse of the superstructures.[9]

Much of the working waterfront in the Port of San Francisco is constructed either on old piers or on unengineered fills that possibly would fail in the same manner as in Kobe. Many of the dilapidated piers elsewhere in the Project Area probably would collapse. Access by road and rail probably would be severely restricted in the Project Area following a major earthquake.

Damage from Tsunami

While tsunami are not likely to be generated by fault movements within San Francisco Bay, the movement of tsunami wave trains from the Pacific Ocean into the Bay could affect the Project Area (see Section IV.I., Environmental Setting, Geology, Soils and Seismicity, pp. 264-265). People could be injured and some of the Port's waterfront facilities could be damaged because of tsunami. The hazards posed by tsunami would be greatest at the immediate waterfront area (i.e., piers, marinas, The Embarcadero, and immediately adjacent areas at low elevation) and would vary by the approach of the waves (a more direct approach is present in the Fisherman's Wharf subarea, a less direct approach is presented by the shoreline configuration in the Northeast Waterfront and Ferry Building subareas, and distance and shoreline configuration attenuate the waves in the Southern Waterfront subarea).

In most cases, tsunami can be predicted well in advance of incursion of the waves onto the point of run-up. The exception for effective forewarning would be for a tsunami generated by a nearby subsea event. Tsunami warning systems have been effective in reducing hazards in most areas. However, a disadvantage of forewarning of tsunami is that, because tsunami are rare events, the warning often attracts some people to the shoreline area who want to observe the waves or move their boats out of harm's way. The highest hazard is posed by waves breaking at he shore and breakwaters, potentially sweeping people into the bay or knocking them off their eet. Under mean sea level conditions, the most serious hazard in the Project Area would be at he Aquatic Park breakwater, Fisherman's Wharf and the Pier 39 marina, areas which are popular with tourists and familiar to residents. Under high-tide conditions, 100-year tsunami could vertop the piers and waterfronts in those areas. Probably the greatest challenge to avoid the azard posed by tsunami would be one of keeping people away from these areas at the time unami are expected.

Tsunami have the potential to damage maritime facilities and boats docked in the marinas. Tsunami waves occurring at high tide could pass over breakwaters and the turbulent waves could damage, overturn or swamp small boats docked in the marinas, fishing boats at Fisherman's Wharf and historic ships at the Hyde Street Pier. Even 100-year tsunami waves in San Francisco Bay probably would not be large enough to damage large ships moored in the Bay. However, large (and small) ships docked at the piers may be damaged by being thrust against the piers and by other boats or ships rammed against them by tsunami.

Seiche waves (oscillating waves similar to waves in a bathtub) could be induced by earthquakes in San Francisco Bay. In general, seiche waves are considered to have substantially lower run-up potential than tsunami, and, therefore, the hazards would be substantially less.

Fisherman's Wharf Subarea

All of the impacts identified for all subareas would apply to the Fisherman's Wharf subarea. The potential hazard to people from earthquakes and tsunami would be relatively high because of the high concentration of people in this area, which probably would increase under all Alternatives and the plans for a concentration of the fishing industry in this subarea. The Alternatives all differ with respect to the potential increase in the number of people exposed to hazard.

Northeast Waterfront Subarea

All of the impacts identified for all subareas would apply to the Northeast Waterfront subarea. The potential hazard to people from earthquakes and tsunami would be relatively high because of the high concentration of people in this area, which probably would increase under all Alternatives. Development would occur on the seawall lots, subjecting the buildings and the occupants to hazards of settlement, earthquakes and the other impacts identified under all subareas. The Alternatives all differ with respect to the potential increase in the number of people exposed to hazard.

Ferry Building Subarea

All of the impacts identified for all subareas would apply to the Ferry Building subarea. The potential hazard to people from earthquakes and tsunami would be relatively high because of the high concentration of tourists, workers and commuters in this area, which probably would increase under all Alternatives (due to the Ferry Building renovation, Ferry Terminal improvements, and development of Rincon Park). However, seismic retrofitting of the Ferry Building under the Plan would result in improved performance of the structure during an earthquake, and a consequent reduction in life safety hazard to the building occupants. The Alternatives all differ with respect to the potential increase in the number of people exposed to hazard.

South Beach/China Basin Subarea

All of the impacts identified for all subareas would apply to the South Beach/China Basin subarea. The potential hazard to people from earthquakes and tsunami would be relatively high because of the high concentration of residents, workers and commuters in this area. The Alternatives all differ with respect to the potential increase in the number of people exposed to hazard.

Southern Waterfront Subarea

All of the impacts identified for all subareas would apply to the Southern Waterfront subarea. The potential hazard to people from earthquakes and tsunami would be relatively low because of the dispersed location of residents and workers in this area and low visitation by tourists. However, the numbers of people exposed to these hazards probably would increase above the present level because of increased maritime activity (particularly under Alternative B) and planned open space/park facilities at Pier 98. The Alternatives all differ with respect to the otential increase in the number of people exposed to hazard.

MPACTS OF THE NO PROJECT ALTERNATIVE

ll impacts identified under the discussion of the previous section, Impacts of All Alternatives, vould apply to the No Project Alternative. Under this Alternative, development and related rowth would be more moderate than for Alternatives A or B, and, therefore, relatively fewer dditional people would be exposed to the potential geologic hazards of the Port. However, ecause less building stock and pier replacement and/or less refurbishing under the San rancisco Building Code (SFBC) would occur under the No Project Alternative, more structures ould remain that would have poorer designs to respond to weak soil and earthquake hazards. he poorer design of the existing structures, as compared to new construction meeting higher esign standards, may be expected to result in greater potential to produce casualties in a major arthquake as well as higher building stock losses and much higher property damage than under

Alternative B. Similarly, a somewhat greater impact than under Alternative A would be expected because of the poorer design of the existing structures, as compared to rehabilitation to meet higher design standards of the SFBC; thus the No Project Alternative may be expected to result in potentially substantial casualties in a major earthquake as well as higher building stock losses and somewhat higher property damage. Construction-related impacts, such as vibration from pile driving, dewatering, and below-grade structures, would be less than under either Alternative A or Alternative B, because less new construction activity would occur. Demolition activity could remain a source of impact under the No Project Alternative.

IMPACTS OF ALTERNATIVE A

All impacts identified under the discussion of Impacts of All Alternatives would apply to Alternative A. Under this Alternative, development and related growth in office, hotel and cargo shipping would be more moderate than for Alternative B, while land uses with relatively small work force demands (such as warehousing) would increase; therefore, on the whole, relatively fewer people would be exposed to the potential geologic hazards of the Port than under Alternative B. On the other hand, a larger number of residents would be exposed to hazards than under the No Project Alternative or Alternative B. The presence of residents would substantially increase the time of exposure to earthquakes, as earthquakes could occur at any time and residents would be in the Project Area at all times. Additionally, because less building stock and pier replacement would occur under this Alternative than for Alternative B, more structures would remain that would have poorer designs to respond to weak soil and earthquake hazards. The poorer design of the existing structures, as compared to new construction meeting higher design standards, may be expected to result in substantial casualties in a major earthquake as well as higher building stock losses and much higher property damage than under Alternative B. Alternative A would entail rehabilitation to meet design standards of the SFBC that are more stringent than those in force at the time of the original construction and, as a result would result in a more substantial hazard reduction than under the No Project Alternative. However, building rehabilitation probably is less effective than new construction in the response to geologic hazards, particularly settlement and earthquake hazards. Construction-related impacts, such as vibration from pile driving, excavation and dewatering, and the construction of below-grade structures, could be less than under Alternative B, because less new construction activity would occur. Less demolition activity may occur than under either the No Project Alternative or Alternative B, with consequent lesser impacts related to this source.

IMPACTS OF ALTERNATIVE B

All impacts identified under the discussion of Impacts of All Alternatives would apply to Alternative B. Under this Alternative, development and related growth would be the highest of the three Alternatives, and, therefore, the largest number of people would be exposed to the potential geologic hazards of the Project Area. Employment growth would be the highest by far under Alternative B. A greater amount of building stock and pier replacement would occur under this Alternative than under Alternative A, and more new structures would be constructed with designs meeting code requirements to respond to weak soil and earthquake hazards. The better design of new construction meeting current standards may be expected to result in reduced hazards leading to casualties in a major earthquake as well as reduced building stock losses and less property damage than under Alternative A or the No Project Alternative. Alternative B would entail rehabilitation to meet design standards of the SFBC that are more stringent than those in force at the time of the original construction and, therefore, would result in a more substantial hazard reduction than under the No Project Alternative. Construction-related impacts, such as vibration from pile driving, excavation and dewatering, and the construction of below-grade structures, would be greater than under Alternative A or the No Project Alternative, because more construction activity would occur. More demolition activity may occur than under either the No Project Alternative or Alternative A, with consequent impacts related to this source.

NOTES - Geology, Soils and Seismicity

Lee, Charles H., and Michael Praszker, "Bay Mud Developments and Related Structural Foundations," *in* Geologic and Engineering Aspects of San Francisco Bay Fill, Special Report 97, California Division of Mines and Geology, 1969.

The U.S. Army Corps of Engineers is the agency responsible for permitting of all dredging in San Francisco Bay under authority delegated to it under the Federal Clean Water Act and the Rivers and Harbors Act. For projects classified as new work, the Corps of Engineers may require preparation of environmental documentation pursuant to the National Environmental Policy Act, e.g., an Environmental Impact Statement.

National Research Council, *Practical Lessons from the Loma Prieta Earthquake*, Report from a Symposium Sponsored by the Geotechnical Board and the Board on Natural Disasters of the National Research Council, National Academy Press, Washington, D.C., 1994.

4 Earthquake Engineering Research Institute, *Northridge Earthquake, January 17, 1994, Preliminary Reconnaissance Report*, John F. Hall, Technical Editor, Publication 94-01, Oakland, CA, March 1994.

5 Earthquake Engineering Research Institute, *Expected Seismic Performance of Buildings*, prepared by the EERI Ad Hoc Committee on Seismic Performance, Oakland, CA, February 1994.

6 Association of Bay Area Governments, *Hazardous Materials Problems in Earthquakes: A Guide to Their Cause and Mitigation* (available at the Association of Bay Area Governments, 101-8th Street, Oakland, California), November 1990.

7 Harding Lawson Associates, Dames & Moore, Kennedy/Jenks/Chilton, and EQE Engineering, Final Report Liquefaction Study, North Beach, Embarcadero Waterfront, South Beach, and Upper Mission Creek Area, San Francisco, California, prepared for City and County of San Francisco, Department of Public Works, January 1992.

8 The size of the Kobe Earthquake was a 6.7 magnitude event, similar to a moderate-sized earthquake that is expected to occur in the Bay Area in the next 30 years. An important difference, however, was related to the near-field effects of ground shaking in Kobe. The Port of San Francisco is more distant from capable faults than the Port of Kobe.

9 EQE, International, The January 17, 1995 Kobe Earthquake, An EQE Summary Report, EQE International, San Francisco, CA, 1995.

10 Until the earthquake, Kobe was one of the largest ports in Japan.

J. HYDROLOGY AND WATER QUALITY

IMPACTS OF ALL ALTERNATIVES BY USE CATEGORY

All Land Uses

Effects on water quality associated with implementation of any Alternative could result from either direct or indirect discharges to surface creeks (Islais Creek and Mission Creek), San Francisco Bay or to the groundwater. Discharges generated from project components could be from sewage, stormwater runoff, or accidental spills or releases.

In general, an alternative involving long-term development or redevelopment throughout the Project Area would involve an associated improvement in infrastructure, as needed for sewage and storm drainage, as well as improved storage and secondary containment for chemicals. Improvements for sewage or storm drainage could include new or upgraded connections to the City's sewer system or (for storm drainage) could include on-site treatment prior to discharge to the Bay. It is assumed that interim uses would not involve major structural or infrastructure improvements; an infrastructure capacity analysis (such as sewer capacity) would likely be undertaken for interim uses, and if major improvements are required for interim uses, these uses would either relocate (outside the Project Area or to a suitable location elsewhere in the Project Area) or provide the needed infrastructure improvements if economical (and thus become long-erm or permanent uses, if otherwise permitted). These improvements, generally required to neet building permit requirements, expand capacity needs, or meet National Pollutant Discharge limination System (NPDES) permit requirements, would in turn reduce the potential for ollutants entering receiving waters (surface creeks and the Bay) and result in an overall mprovement in surface water quality. Prior to construction of any infrastructure improvements, he Port would conduct a plan review of proposed improvements to assure compliance with the ity's building and plumbing codes and that any previous code violations (such as direct ischarge of wastewater to the Bay) are corrected (this review is current practice). Protection of urface water quality would indirectly provide protection of groundwater quality. (See Section I.J., Mitigation Measures, Hydrology and Water Quality, p. 662, Improvement Measures 2 and .)

ewage

ewage (wastewater) facility improvements could consist of new laterals (small diameter pelines) that would extend from the new development to existing sewer mains located predominantly beneath roadway rights-of-way adjacent to the waterfront that would convey wastewater (from residential, commercial, industrial or other uses) to the Southeast Water Pollution Control Plant (Southeast Plant) for treatment prior to discharge to the Bay. Discharges to the Bay from the Southeast Plant are regulated under the NPDES permit issued by the Regional Water Quality Control Board (RWQCB), and are regularly monitored to assure protection of Bay water quality. If necessary, pre-treatment of industrial discharges may be required prior to discharge into the City's sewerage system in accordance with requirements of the San Francisco Public Works Code, Article 4.1, Industrial Waste.

The volume of wastewater generated by the potential new or replacement uses would depend on the specific uses, among other factors. Wastewater flow projections are dependent on a wide range of factors, including number of people (residents and non-residents), population density, type of use, size of structure/facility, number of fixtures, climate, local regulations, and other local conditions. Therefore, it would be premature to estimate wastewater flow for any of the EIR Alternatives based on the general information available at this time on potential land uses. However, because growth under the EIR Alternatives generally represents variations on the amount of overall San Francisco growth that would be captured by the Project Area rather than additions to overall City growth, it is reasonable to assume that increases in wastewater flow would generally be within the amount expected for San Francisco as a whole. For some economic sectors, there could be additions to overall City growth (especially in Alternative B), and associated increases in wastewater flows. The capacity of the existing sewer mains, treatment plant and outfall to accommodate increased volumes of wastewater associated with new long-term development would need to be evaluated on a project-by-project and/or cumulative basis, depending on the schedule for implementation of the various improvements, when more detailed information is available regarding the type and size of the major uses.

Stormwater Runoff

Stormwater runoff in the Project Area flows either into the City's combined sewer system (generally areas on the landside of The Embarcadero) or directly to the Bay (generally areas on the waterside of The Embarcadero, including the piers). Currently, no stormwater from piers is collected in the sewer system.[1] On Pier 45, some of the drainage to the Bay is partially treated through two 4,000-gallon oil and water separators, prior to discharge to the Bay. Improvements to the stormwater drainage system associated with new development or re-development could consist of facilities to divert stormwater runoff into the City's sewerage system or else to divert the runoff to on-site treatment facilities such as those at Pier 45 prior to direct discharge to the

Bay. If development occurs on piers without improvements to divert stormwater runoff, pollutants could be carried in stormwater runoff to the Bay (see the discussion of commercial uses later in this section). Section V.K., Environmental Impacts, Public Services and Utilities, includes gross estimates of acreage that now drains to the Bay that could be sewered under each of the EIR Alternatives.

At this time, there are no specific proposals to alter stormwater drainage patterns within any of the subareas, although implementation of various aspects of the Alternatives would likely result in some alteration, depending on site-specific conditions. Currently, about 120 acres (20 percent) of the Project Area (other than existing landscaped open spaces) is unpaved, located almost entirely in the Southern Waterfront subarea, including the Pier 70 area, the Western Pacific Railyard, and Seawall Lot 352. In these areas, some of the stormwater is retained on site and percolates through the underlying soils, rather than flowing over an impermeable surface as runoff and draining elsewhere. Under any of the EIR Alternatives, development could occur on some or all of these unpaved areas. Increasing the area of impermeable surfaces, either through paving or construction of buildings on currently unpaved areas, would increase the volume of stormwater runoff but could be accommodated within the existing capacity of the combined sewer/stormwater system. The major unpaved portion of the Project Area for all Alternatives would be the existing or planned open spaces, including (among others) Rincon Point Park, South Beach Park, Warm Water Cove, and Pier 98 wetlands.

As described previously in the Setting (Section IV.J., Environmental Setting, Hydrology and Water Quality, pp. 276-277), under the Port's and Port tenants' Storm Water Pollution Prevention Plans (SWPPPs), Best Management Practices in the Port and tenant facilities are currently being mployed to protect water quality. The on-going implementation of the Port's and Port tenants' SWPPPs and the group monitoring program would result in long-term improvement in the uality of stormwater runoff and therefore receiving water quality. Development and/or re-evelopment of industrial uses along the waterfront would involve preparation of a SWPPP, as equired by the RWQCB. New industrial tenants could participate in the group monitoring rogram, as determined by the Port, based on their willingness to comply with the Port's rogram and on the type of operation.[2] This increased awareness of stormwater runoff control as ell as cumulative implementation of the Best Management Practices would result in long-term nprovements to water quality. Non-industrial uses would not be required to prepare SWPPPs, ut generally are not considered major individual contributors to stormwater runoff water quality oblems. The stormwater runoff quality from commercial uses, for example, would be onsidered typical of urban runoff (see discussion of commercial uses later in this section).

Accidental Spills

Use and handling of chemicals at any of the land uses could result in an accidental spill or release of chemicals to surface or ground waters. If improperly managed and cleaned up, the chemicals could result in levels of pollutants in receiving waters that exceed water quality objectives. As discussed in Section IV.M., Environmental Setting, Hazards and Hazardous Materials, (pp. 312-313), Article 21 of the San Francisco Municipal Code, Hazardous Materials Ordinance, provides for safe handling of hazardous materials in the City and is designed to protect the health and safety of the general community. Provisions in the Hazardous Materials Ordinance, such as documenting hazardous materials usage with the Department of Public Health as information for emergency response personnel, also protect water quality of surface and ground waters.

The potential for an accidental spill or release and the degree of water quality impact would vary with a number of factors, including the type of land use, volume and type of chemicals, site-specific management practices, worker training, regulatory requirements, emergency response planning, etc. These issues are discussed further below according to various land use categories. However, it should be noted that with implementation of the Alternatives, the potential for an accidental spill or release would be essentially the same or less than the existing conditions, due to increased regulatory control over chemical handling and storage and improved technology regarding spill containment and leak detection.

Maritime Uses

Shipping and Boating Activities

There are numerous activities associated with maritime uses that can potentially affect water quality. Any type of shipping or boating activity involves handling and storage of chemicals, which could intentionally or unintentionally be discharged to surface waters. Sources of these include fuels (petroleum hydrocarbons such as oil, diesel, and gasoline and other chemicals used in fuel mixtures, such as benzene, toluene, ethylbenzene, and xylene), bilge water (which can contain fuels, heavy metals, and polynuclear aromatic hydrocarbons), boat cleaning and maintenance materials (which can include organic tin compounds toxic to marine life such as tributyltin), sewage from boats (often measured by coliform bacteria as an indicator organism), washdown water from boat cleaning (oil and grease, detergents) and miscellaneous garbage and debris.

Fuel spills to the Bay are currently regulated under provisions of the federal Oil Pollution Act of 1990 and the California Oil Spill Response Act. Enforcement of these provisions is under the jurisdiction of the U.S. Coast Guard and the California Department of Fish and Game. These agencies as well as the California RWQCB and the U.S. Environmental Protection Agency must be notified in the event of a spill. The Coast Guard has enforcement authority over any amount of oil or product that creates a sheen on the water, either from the fuel tank, bilge water or other boat-related sources. In the event of a fuel spill, the Coast Guard's current policy is to send investigators to the scene of the spill to determine the source. If the owner or operator is located, the Coast Guard assesses a civil penalty and requires the owner/operator to clean up the spill. If the source of the spill or the owner/operator cannot be located or the owner/operator cannot clean up the spill, the Coast Guard would hire a general contractor to clean up the spill and rely on money from an existing pollution fund. The Coast Guard assesses a civil penalty and associated fine on most spills. Most calls to the Coast Guard in San Francisco Bay are for small spills.[3] The Department of Fish and Game also has authority to assess penalties for spills. In the past year, there have been fewer than ten reported incidents and all were for minor spills of less than ten gallons.[4]

The Port currently has one oil disposal facility at Fisherman's Wharf (a 260-gallon tank for disposal of used crank-case oil), and fuel spill kits at the Hyde Street Pier and Pier 46 (which include absorbent booms, absorbent pads, and other absorbent material). The City of San Francisco and the Port developed a San Francisco Spill Prevention and Response Plan in August 1993, which provides an incident command system in the event of a major oil spill in the Bay near San Francisco (with the U.S. Coast Guard taking primary responsibility, and the Port, a supporting role). The plan has been updated annually through the City's Department of Public Health using State funding in coordination with the Port. The most recent update was in September 1995, but the funding for 1996 is uncertain.[5] Maintaining an updated oil spill esponse throughout implementation of the WLUP would be necessary to minimize potential water quality impacts associated with oil spills in the Bay (see Section VI.J., Mitigation Measures, Hydrology and Water Quality, p. 663, Improvement Measure 6).

Any discharge from ships or boats to the Bay is regulated through permits from the RWQCB and n conjunction with the U.S. Coast Guard. Sewage discharges from any vessels are permitted if he vessels are equipped with Coast Guard-approved marine sanitation devices. These devices rovide for disinfection of bacteria, such that no water quality effects would result with proper se. If available, vessels can also use sewage pump-out facilities available at some ports to ispose of sewage.[6] The Port does not have any sewage pump-out facilities for public vessel use (there is one private facility at Pier 39 that boats can use), although a vessel sewage pump-out station connected to the City's sewage system is proposed to be installed near the fuel dock at Hyde Street Harbor.

Any other type of discharge to the Bay from vessels, such as bilge water, or wash water, would require a permit on an individual basis from the RWQCB. The RWQCB, however, has never issued such a permit.[6] Generally, the Coast Guard permits such discharges at a distance of about three miles off the coast. The Port does not have any bilge pumping facilities, and does not plan to develop any (due to difficulties in enforcing use and in maintaining facilities). The RWQCB can assess fines for any unpermitted discharges to the Bay from vessels. If vessels comply with discharge regulations, the RWQCB does not consider shipping and boating activities, regardless of the level of activity, to be detrimental to water quality effects to the Bay.[6]

The RWQCB issues NPDES permits for shipyards and boatyards to regulate any runoff from ship and boat repair from affecting Bay water quality. All boatyards (for vessels generally under 60 feet long) are permitted under a General Permit for the Bay, which essentially prohibits any discharge to the Bay. Shipyards (for vessels over 60 feet long) operate under individual permits that set limits for allowable discharges. Any increase in boating and shipping activities due to new or expanded uses under any of the Alternatives would be expected to result in a related level of increase in activities at boatyards and shipyards for repair work. No changes in water quality effects, however, would be expected with increased levels of activities since all discharges from boatyards and shipyards would continue to be regulated by the RWQCB with the objective of protecting water quality. It would be likely that any increased level of ship/boat repair requiring expansion of existing facilities would incorporate new technology for spill control and waste discharge in order to comply with RWQCB discharge requirements.

Dredging and Fill Activities

Continuation and expansion of maritime activities would be expected to require periodic maintenance dredging and fill activities at various waterfront locations, depending on the specific needs of shipping and boating activities and the site-specific bathymetry and water circulation patterns. Dredging and fill activities would be expected to result in short-term localized effects to the Bay water quality, as discussed under Construction Impacts below.

Fish Processing Activities

Other maritime uses that are indirectly water-dependent, such as fish handling and fish processing, or maritime office, would less likely affect water quality, since discharges of waste would be handled through the City's sewer system. In the fish processing industry, floor drains for washdown water would connect to the sewer system and solids would be collected in traps in he drains; no fish processing activities would be conducted on the aprons of the piers so that no fish waste would be washed off the aprons and drain directly to the Bay. New long-term development or re-development of this type of industry would occur within buildings that would be expected to install new drains that connect to the sewer system, such as those recently completed on Pier 45, as part of required structural modifications. Use of existing facilities without floor drains that connect directly to the sewer system would not be appropriate for nterim fish processing industries. Any tenant improvements to Port facilities would require plan approval by the Port for compliance with the City's building and plumbing codes. Unless otherwise approved by the RWQCB, all wastewater and sewage facilities (including fish processing washdown water) would be required to be connected to the City's sewerage system.[7] Standard housekeeping practices, such as litter and trash control, would prevent nuisance conditions (such as floatable debris) from occurring at nearshore waters.

ndustrial/Warehouse Uses

ndustrial uses could have the potential to affect water quality due to the transport, storage, and andling of chemicals, which are generally present in larger quantities compared to other land ses. Developments could also result in increases in chemical storage or use in the Project Area. Use of under- or above-ground storage tanks associated with this type of land use is a common ource of water quality problems, due to the potential for leakage or spills. These storage tanks an be used for a variety of materials, including fuels, waste oil or other chemicals, and any akage or spills could affect surface or ground waters. (See Sections IV.M. and V.M., nvironmental Setting and Environmental Impacts, Hazards and Hazardous Materials, for scussion of underground storage tanks.) Regulation of underground storage tanks is under the uthority of the RWQCB, with the San Francisco Department of Public Health as the primary cal regulatory authority.

ny new long-term industrial or warehouse uses involving the handling or storage of chemicals ould be expected to have updated and improved facilities for storage, leak detection, secondary ntainment and other devices to protect water quality as required by federal, State and local regulations. Interim uses in existing structures would also be required to meet the minimum requirements for chemical handling and storage, such as underground storage tank regulations and the Hazardous Materials Ordinance, which could vary depending on the specific use and types and amounts of chemicals used. In addition, on-going implementation of the Storm Water Pollution Prevention Plan for the Port and Port's tenants required by the RWQCB for industrial uses would further improve water quality in the Project Area.

Residential and Commercial Uses

Residential and commercial uses would generally not be expected to result in changes to water quality, for surface or groundwater. On inland, seawall lots, where all residential or hotel uses would occur, the sewage and stormwater drainage would be connected to the City's sewerage system. Therefore, wastewater would be treated as part of the City's overall wastewater system, and discharges would be regulated under NPDES permits, which have been established to provide protection of water quality.

However, all Alternatives would include some new or existing commercial uses on piers and other waterside lots, where stormwater runoff could continue to drain either to the sewer system or directly to the surface waters of the Bay. Washdown of these commercial areas from roof tops and paved areas, particularly parking, storage and delivery areas, would have the potential for oil, grease, petroleum hydrocarbons, and other contaminants to be present and to be transported as urban runoff to the Bay if the pier is not connected to the sewer system. Installation of oil/water separators on piers currently not connected to the sewer system for on-site treatment of drainage, similar to the system recently constructed at Pier 45, would reduce any potential water quality effects from urban runoff in the commercial areas that drain directly to the Bay. (See Section VI.J., Mitigation Measures, Hydrology and Water Quality, p. 662, Improvement Measure 1.)

Other water quality concerns in commercial areas (such as restaurants and retail stores along the waterfront) would be associated with litter and trash, which due to the proximity to the Bay, could be blown by wind or carried by birds to the Bay. Standard housekeeping and trash control would reduce this occurrence. The Port currently provides daily cleanup of litter and floating debris using work skiffs in the Fisherman's Wharf area due to the poor circulation in this area; this practice would be expected to be continued under any Alternative. The Port does not conduct this practice at other areas of the waterfront because tidal action typically removes floating debris from the Project Area (and therefore, beyond the area of their cleanup efforts).

Other Uses

Other categories of land use, such as open space and public access, would generally not be expected to be associated with water quality effects, other than stormwater runoff and litter and trash as discussed above. Use of fertilizers or herbicides in open space and public access areas could contribute to water quality effects, but their use would be limited to landscaped areas which comprise a minor portion of the open space and public access uses. In landscaped and turf areas, runoff can infiltrate the soil, and dissolved constituents can either be taken up by plants or be adsorbed onto soil particles. With proper use of fertilizers and herbicides in these areas, excess chemicals would not be expected to be discharged either in the surface runoff or through infiltration into the groundwater.

At former landfill sites at Pier 98, Seawall Lot 352 and Pier 70, long-term use of the sites would in large part be determined by the closure plans, which the Port and RWQCB are currently negotiating (see Section IV.M., Environmental Setting, Hazards and Hazardous Materials). Water quality impacts of the sites, whether interim or long-term, capped or left open, are being and will continue to be monitored by the RWQCB as part of the closure requirements to observe for potential water quality degradation from the landfills. Under any Alternative, the Port would be required to implement any action determined necessary by the RWQCB to assure protection of water quality. Thus, it is assumed for all Alternatives that potential water quality impacts associated with the landfill, closure, and long-term use of the sites would be addressed by the RWQCB as part of the closure process and no further mitigation would be necessary.

Under Alternative A, a cogeneration power plant would be constructed south of the Islais Creek Channel. A Final Staff Assessment prepared by the California Energy Commission assessed the otential water quality impacts that could result from construction of the facility proposed by the an Francisco Energy Company. The Assessment concluded that the cogeneration plant would ot cause any significant impacts to water resources. Wastewater discharges from the plant ould be returned by dedicated pipeline to the Southeast Plant or to the sewer system and then e wastewater treatment facility. Wastewater streams would be monitored by the water ollution control facility staff. San Francisco Energy Company would be required to develop nd implement an erosion and stormwater runoff control plan to ensure that contaminated diment and runoff do not leave the site.

Construction Impacts

There are several categories of construction activities associated with development or re-development of land uses in the Project Area which could potentially affect water quality in either the surface or ground water. The types of construction activities include: dredging and placement of fill materials in the Bay; excavation and earthmoving activities; construction dewatering and discharge of groundwater; demolition and construction; and water-based construction activities.

Removal, replacement or reconfiguration of piers would disturb Bay sediments in the Project Area, and Bay sediments may contain various concentrations of chemicals. Dredging and placement of fill/rock materials in the Bay would be expected to result in short-term, localized effects to the Bay water quality. These effects could include lower dissolved oxygen, increased turbidity and salinity, increased concentration of suspended solids, and possible release of chemicals present in the sediments into the water column. Due to the circulation and tidal effects of water in the Bay, the affected water would in general be expected to be dispersed and diluted to the Bay following completion of construction activities. The Port currently schedules any dredging activities to avoid conflicts with the herring season or with activities at the swim clubs.[4] (See also Section V.H., Environmental Impacts, Biological Resources, for a discussion of dredging impacts.)

Dredging activities, including deposition of dredged materials, are strictly regulated by the U.S. Army Corps of Engineers, the Bay Conservation and Development Commission (BCDC), and the RWQCB. The RWQCB must issue Water Quality Certification prior to any dredging activity to assure that Bay water quality is protected. This and other aspects of environmental review of the effects of dredging and placement of dredged material are currently being conducted as part of the Corps of Engineers' (COE) Long Term Management Strategy. Due to these regulations, water quality effects associated with dredging activities within the Project Area are anticipated to be short-term and localized only, as discussed above. Long-term impacts would not be expected, since pre-testing of sediment material is required prior to dredging and the RWQCB must approve of the sediment quality prior to the issuance of the Water Quality Certification. Disturbance of sediment of approved quality would not be expected to result in long-term effects on water quality in the Project Area. However, there could be long-term water quality impacts associated with disposal of dredged material, which has generally been near Alcatraz Island, for current and previous Port projects. Environmental impacts resulting from disposal of dredge materials at this site and others (including upland sites) are being considered by the COE in the environmental review for the Long Term Management Strategy. Dredging in the Project Area associated with any of the Alternatives, including the No Project Alternative (maintenance dredging), would contribute to the regional water quality impacts of dredge disposal at any of the sites being considered.

Under the various Alternatives, 4 to 13 acres of new fill could be added to the Bay in the Project Area to accommodate water-dependent uses. Not all of the water-dependent fill would be net new fill due to the BCDC practice of requiring at least partial offsetting of fill. Similar to dredging, placement of fill materials is also extensively regulated by the Corps of Engineers, BCDC, and the RWQCB. The quality of fill material must be adequate to assure no long-term degradation of water quality. Thus, placement of fill would be expected to result in short-term, localized effects to the Bay water quality (related to dissolved oxygen and increased turbidity), as discussed above, but no substantial long-term water quality effects of that kind are expected (assuming that fill is placed in accordance with federal, State and regional regulations).

Placement of fill could result in long-term changes in flow patterns or tidal flushing, which may or may not affect water quality. Given the general nature of the WLUP and EIR Alternatives, it s difficult at this point to determine the extent, if any, of the impacts that could occur. Changes n flow patterns and tidal flushing resulting from fill would depend on a number of factors, ncluding (among others) the extent to which the new fill is concentrated in a few locations (as pposed to being spread out among a number of small projects), and the specific location(s) of he fill. For example, placement of a relatively large amount of fill in an enclosed area where here is restricted tidal flushing could further reduce tidal flows; placement of a smaller amount f fill in a more exposed location might have little or no effect on flows. In addition, changes in idal flushing that might occur as the result of fill placement would not necessarily affect water uality, because of the number of other factors that affect water quality (such as point and non-oint source discharges, rainfall, or other ambient conditions). As stated above, it is likely that ere would be no substantial long-term water quality effects related to placement of fill, but site-pecific information on fill placement amounts and locations involved would be needed to etermine if flow patterns would be affected.

lacement of fill would be unlikely to result in a significant water quality impact, because of the mited amount of fill, the likelihood that it would be spread out over the entire Project Area, and e fact that placement of fill would be subject to regulatory review and agency approval. lacement of fill would likely be associated with a project that receives project-specific environmental review, and agency approval would be contingent on a finding of no significant water quality impact.

Under the various Alternatives, approximately 5 to 97 acres of "replacement fill" could occur within the Project Area. The "replacement fill" area would be smaller than the existing piers or decks replaced, per BCDC policy. The placement of replacement fill could result in short-term, localized effects to Bay water quality, related to dissolved oxygen and increased turbidity, as discussed previously. Assuming that the Port must obtain Water Quality Certification prior to replacement fill activities, no long-term effects related to dissolved oxygen and increased turbidity are expected. Long-term effects related to reduced tidal flushing and decreased flows would generally not be expected, because the replacement fill would be placed in essentially the same locations as the original fill, and because the replacement fill area would be smaller than the original fill area. As with the new fill, long-term effects of replacement fill on flow patterns are site- and project-specific, and cannot be determined at this time.

Under the various Alternatives, approximately 5 to 97 acres of "replacement fill" could occur within the Project Area. The "replacement fill" area would be smaller than the existing piers or decks replaced, per BCDC policy.

Construction of any structures associated with the various land use categories would require varying degrees of earthmoving and excavation activities. Exposure of soil during construction could result in wind-borne or water-borne sedimentation to surface waters, potentially increasing suspended solids and turbidity and decreasing dissolved oxygen. Depending on the proximity of construction activities to surface waters, various construction measures to prevent sedimentation to surface water, such as silt fences or sandbags, could be used to minimize effects on surface waters. (See Section VI.J., Mitigation Measures, Hydrology and Water Quality, p. 663, Improvement Measures 4 and 5.)

Excavation activities, depending on the depth of proposed structures and foundations, could potentially expose previously contaminated soil or groundwater and result in the potential to spread the contaminants to surface waters, such as the Bay (Section V.M., Environmental Impacts, Hazards and Hazardous Materials, pp. 617-622). In addition, excavation could also expose the shallow groundwater, since groundwater depths along the waterfront could be as little as four feet below ground surface. Dewatering activities might be required to complete construction activities, and discharge of groundwater could either be directly to the City's sewer system or to the Bay. Discharge to the sewer system would require that the groundwater quality meets the requirements of the City's Industrial Waste Ordinance, and discharge to the Bay or creeks would require a permit from the RWQCB.

Demolition of structures, particularly buildings located on piers extending into the Bay, could result in construction debris entering the Bay and affecting water quality. Building materials likely to be present in existing structures include lead-based paint, which if improperly handled during demolition could become chipped and enter the Bay and increase lead concentrations. (See Section VI.M., Mitigation Measures, Hazards and Hazardous Materials, for mitigation relative to hazardous materials and demolition.) Removal and reconstruction of piers and pilings would result in short-term disturbance of local Bay sediments, similar to dredging, and could also result in construction debris and associated chemicals affecting water quality. Pilings are typically constructed of wood that has been treated with creosote, which is an effective wood preservative in a marine environment, but which also may contain organic compounds toxic to marine organisms. Although removal of creosote pilings may release some organic substances into the Bay, replacement of the pilings would either be with concrete pilings or other materials, since use of creosote pilings is no longer permitted. Replacement of creosote pilings with concrete or other types of piling would result in a long-term improvement in water quality. (See Section V.H., Environmental Impacts, Biological Resources, p. 550, for further discussion of creosote.) In addition, development of uses along the waterfront might require water-based construction activities, involving ships and barges handling construction equipment. Construction activities located on or adjacent to the Bay would result in increased potential for spills, construction materials or debris to enter the Bay and affect water quality

IMPACTS OF THE NO PROJECT ALTERNATIVE

In general, the No Project Alternative would result in a similar level of water quality as that associated with current land use conditions. This Alternative would involve leaving some or all deteriorated piers in the Project Area (particularly in the South Beach/China Basin subarea), rather than removing, repairing or replacing them, and would result in long-term water quality and sediment degradation associated with pier materials (such as wood, creosote, lead-based paint, etc.). Portions of deteriorating piers can break loose, and, through wave and tidal action, break apart utility systems under pier decks. Short-term water quality degradation could occur from broken sewer lines under piers. Dredging would be limited to maintenance dredging as currently practiced; there would likely be somewhat more dredging than there is currently, due to an assumed increase in maritime activity (in particular, ferry and excursion activity in the Fisherman's Wharf and Ferry Building subareas). Placement of new fill for water-dependent uses would be limited to about four acres; "replacement fill" could total five to seven acres. Dredging and placement of fill would result in short-term localized water quality effects as discussed previously, but no substantial long-term water quality effects would be expected (assuming that fill is placed in accordance with federal, State, and regional regulations). There would be minor increases in stormwater runoff in the Southern Waterfront subarea due to the paving of unpaved areas. The No Project Alternative would have the lowest increase in shipping and boating activities; no effect on water quality is expected due to shipping and boating activities.

IMPACTS OF ALTERNATIVE A

In general, implementation of Alternative A would maximize the interim use of existing structures and facilities. This Alternative would involve more interim general warehouse/light industry type uses, compared to the No Project Alternative or Alternative B, which by nature of being shorter term, would not include major improvements to the wastewater and stormwater infrastructure. Increases in warehouse and light industry (in terms of both building space and open land area) would likely increase the quantity of chemicals used and stored on site, which could increase the potential for water quality effects associated with industrial uses, as discussed above (pp. 589-590). Depending on the phasing of construction and level of build-out in the various subareas, there could be a cumulative effect on the capacity of the combined sewer/stormwater system and additional main pipelines may be required. There would be somewhat more dredging under this Alternative than the No Project Alternative (due to an assumed increase in maritime activity, but less than under Alternative B. Similar to the No Project Alternative, some deteriorated piers would remain in the Bay, with potential long-term water quality effects.

Under Alternative A, there would be about four acres of fill placed in the Bay for water-dependent uses, the same as under the No Project Alternative but less than half of Alternative B; "replacement fill" could total 42 to 65 acres. Short-term impacts associated with dredging and fill activities would be greater than those of the No Project Alternative. No substantial long-term water quality effects would be expected (assuming that fill is placed in accordance with federal, State, and regional regulations). Similar to Alternative B and more than the No Project Alternative, there would be increased volume in stormwater runoff in the Southern Waterfront subarea due to paving of unpaved areas; this volume of increase could likely be accommodated within the existing capacity of the City's combined sewer collection and treatment system. Although there would be an increased level of shipping and boating activities compared to the

No Project Alternative, no effects on water quality would be expected assuming vessels would be operated in compliance with Coast Guard and RWQCB discharge regulations.

IMPACTS OF ALTERNATIVE B

Alternative B would involve the highest intensity of development of all Alternatives, including the greatest increase in maritime uses, particularly cargo shipping. Increases in maritime uses would increase both the level of construction activities that could affect water quality and the level of long-term operations that could affect water quality; this increase in maritime uses would require commensurate increases in water quality protection provisions (which have associated permit requirements), such as emergency response programs, spill containment equipment, vessel pump-out stations, oily waste disposal facilities, dry docks for ship cleaning and repair, etc.

Because of the high intensity of development, this Alternative would also have the highest intensity of demolition and other short-term construction impacts, as discussed above, p. 594. This Alternative would also require the greatest amount of dredging, and therefore the greatest demand for disposal of dredge material and the greatest contribution to regional dredge disposal impacts. Dredging would be required in locations throughout the Project Area, for pier removal and replacement and increases in maritime activity. Alternative B could include the potential physical removal or reconfiguration of a number of piers, which would result in a long-term improvement in water quality since creosote pilings would be replaced by cement or other non-toxic materials. Alternative B would involve placement of about 13 acres of new fill material in the Bay and involve about 77 to 97 acres of replacement fill, which would result in short-term localized water quality effects in a larger area and during longer periods of time than either the No Project Alternative or Alternative A. No substantial long-term water quality effects would be expected (assuming that fill is placed in accordance with federal, State, and regional regulations.

With implementation of Alternative B, improvements to wastewater and stormwater facilities would be constructed as necessary to accommodate associated increases in wastewater and unoff. These improvements could include new sewer laterals to service facilities on piers, onnections of stormwater drainage facilities to the sewer system, or on-site oil/water separators o treat stormwater prior to discharge to the Bay. Under Alternative B, the estimated increase in tormwater runoff volume in the Southern Waterfront subarea would be greater than that in Alternative A due to paving/development of unpaved areas, contributing to cumulative increases n stormwater or wastewater flows. Depending on the nature of and proximity to other new long-term developments, sewer infrastructure capacity in this area could be expanded if necessary to accommodate the cumulative increases in stormwater/wastewater flow as determined by the City in coordination with the RWQCB. There would be less warehouse and light industry building space compared to the other Alternatives, and much less general industry open land area than the other Alternatives, thereby decreasing the potential for water quality effects associated with non-maritime industrial uses. More specific detail regarding individual uses, the actual phasing of the development, and specific locations of the infrastructure needs would be needed to determine the system capacity requirements.

Alternative B would promote the greatest increase in shipping and boating activities in the Project Area, including ferry and excursion boats, recreational boats, and cargo and cruise ships. There could be more historic ships located at Fisherman's Wharf, which, depending on the number and type of mooring, could affect the internal circulation and flushing within the Hyde Street Harbor area. Detailed modeling of site-specific conditions, accounting for tidal action, currents, wave action, bathymetry, etc., would need to be conducted to determine the effects of the ships on circulation in the harbor or adjacent areas (such as Aquatic Park). Even though Alternative B would involve the greatest increases in shipping and boating activities compared to the No Project Alternative and Alternative A, no effects on water quality or other beneficial uses (such as swimming) would be expected assuming vessels would be operated in compliance with Coast Guard and RWQCB discharge regulations. (Increases in runoff would not be expected to affect swimmers, if stormwater runoff meets RWQCB requirements and swimming beaches are monitored for public health compliance, as discussed in Section IV.J., Environmental Setting, Hydrology and Water Quality, p. 281.)

NOTES - Hydrology and Water Quality

1 Byrne, Ed, Structural Engineer, Port of San Francisco, telephone communication via Kari Kilstrom with Paul Deutsch, San Francisco Planning Department, March 15, 1996.

2 Jones, Roberta, Health and Safety Manager, Port of San Francisco, telephone communication with Michele Bellows, Orion Environmental Associates, January 18, 1996.

3 Corey, Chad, U.S. Coast Guard, QM-2, Marine Environmental Response and Petty Officer Chris Mandin, Coast Guard Marine Safety Office, telephone communication with Joyce Hsiao, Orion Environmental Associates, July 12, 1995.

4 Jones, Roberta, Health and Safety Manager, Port of San Francisco, telephone communication with Joyce Hsiao, Orion Environmental Associates, January 12, 1996.

5 Lee, Richard, Senior Industrial Hygienist, San Francisco Department of Public Health, telephone communication with Joyce Hsiao, Orion Environmental Associates, January 31, 1996.

6 Bruhns, Will, Public Assistance Officer, California Regional Water Quality Control Board, San Francisco Bay Region, telephone communication with Joyce Hsiao, Orion Environmental Associates, January 31, 1996.

7 Bubnis, Ed, Chief Building Inspector, Port of San Francisco, telephone communication with Joyce Hsiao, Orion Environmental Associates, February 1, 1996.

K. PUBLIC SERVICES AND UTILITIES

IMPACTS COMMON TO ALL ALTERNATIVES

Fire Protection

The Fire Department does not anticipate having to add new facilities as a result of any of the EIR Alternatives. New construction and new occupancies (changes of use) would have to conform to current Building Code standards, as would intensification or expansion of existing uses.[1] Buildings may be required to install fire prevention devices, such as fire alarms, sprinklers, standpipes, or suction connections (to allow the use of Bay water) depending on the type of new use and the occupancy load.[2]

Schools

On the basis of overall growth projections for San Francisco, the District projects demolition and complete reconstruction of at least one school and reconstruction of many other schools. None of the EIR Alternatives would change these projections. School facility improvements are primarily funded by surcharges to building permit fees.[3]

Recreation/Open Space

Development under any of the EIR Alternatives would not directly impact existing parks, except to increase their usage. Existing open spaces and public access areas could be reconfigured, replaced or expanded in connection with new development; these changes would vary by Alternative, as discussed later. San Francisco Bay Conservation and Development Commission (BCDC) Bay Plan policies require that maximum feasible public access be provided in and through new waterfront development, and that such access be permanently guaranteed. New areas dedicated to public access, open space and/or recreation would be expected under each Alternative, also varying by Alternative, as discussed later. Certain open spaces could be enhanced or improved under any of the Alternatives (e.g., Pier 98). Specific management decisions for most of these planned or potential new areas have not been made. In general, maintenance and management of open spaces and public access created in conjunction with development in the Project Area would likely fall to the Port or the Port tenants sponsoring the development. Revenues to pay for such maintenance come from Port revenues (not the City General Fund). In cases where another public agency or entity (e.g., the Redevelopment Agency or the Department of Public Works) sponsors a project, that agency would often assume responsibility for long-term maintenance and management of an associated open space or park.

Maintenance resource needs would depend on the characteristics of the particular park or open space that may be created and the traffic it would receive. For example, the new park at India Basin requires a maximum of one gardener and one part-time custodian, due to its low maintenance vegetation and minimal structures on the 55,300-square-foot parcel.[4] Maintenance requirements of future open spaces and parks are unknown, but they could be similar to those for India Basin Park or higher.

Health Services

Present demand on emergency services is low in the Project Area, so any growth in either the resident population or the daytime population would increase the demand for the services. The Department of Public Health estimates the demand based on the permanent population, the land use, and characteristics of the population base (such as age).[5] Demand for services would be most noticeable where use intensity increases.

An increase in business in the Project Area, especially industrial land uses, could be expected to ncrease demand for Toxic Program staff time (for tasks including business registration and nspection). Under the No Project Alternative, there would be a modest increase in new ndustrial uses. Under Alternative A, the larger projected growth in industrial and warehouse activity would suggest greater use of hazardous materials. And lastly, although Alternative B epresents a shrinkage of industry and warehouse use, it does allow for a large increase in hipping and maritime support, typically activities that store and handle hazardous substances. New businesses under any of the Alternatives may be required to comply with Articles 21 and 22 f the San Francisco Health Code (hazardous materials and hazardous wastes ordinances). In ddition, new construction may require a rigorous soil sampling regime pursuant to the City's Article 20 of the Public Works Code.[6]

Demand may be great enough to require larger staffing, but in all cases new staffing in 2010 would be supported by new "user fees." Article 20, currently 100 percent funded by developer ees, would function in the same way in 2010, with one Department staff person.[7] The azardous Materials Ordinance, which today is 75 percent fee supported (with one part-time aff person), would be 100 percent fee supported by 2010.[8] The size of the program (16 employees) could grow if the number of fee paying businesses increased sufficiently. The Hazardous Wastes Ordinance (Article 22 of the Health Code) is currently 50 percent fee supported. In the near future, the program's budget (with one part-time employee) is projected to be fully fee supported.[7]

Water Delivery System

The Water Department deems current water supplies adequate for the projected EIR Alternatives in 2010, based on current consumption and conservation rates. The Water Department estimates demand based on the number of fixtures proposed for each development (showers, toilets, sinks, and laundries). It determines whether the existing system has adequate capacity for the demand.[9]

Some water delivery infrastructure would probably have to be increased, however, especially in areas south of the Ferry Building, where Alternatives A and B suggest that a large number of new users would be established.[10] More minor infrastructure improvements could be required under the No Project Alternative. (Temporary impacts related to construction of the infrastructure could occur, such as interruption of vehicle circulation, which would be evaluated and mitigated if necessary at such time specific development projects may be proposed.)

Sewer Facilities

The City's treatment network has sufficient capacity to accommodate dry weather flow from new development on Port properties under any of the Alternatives. It is the policy of the Department of Public Works to accept storm drainage from the piers should the Port decide at some time to invest in drainage infrastructure. However, for economic and engineering reasons the Port may decide to continue handling stormwater flow separately (as indicated in Section IV.K, Environmental Setting, Public Services and Utilities, pp. 301-302, storm runoff from piers goes directly into the Bay and is not included in Department of Public Works treatment estimates).[11]

The Embarcadero roadway project includes the installation of a drainage network to carry storm runoff to the City's combined flow system. This improvement will treat some of the storm runoff in the Fisherman's Wharf, Northeast Waterfront, Ferry Building, and South Beach/China Basin subareas that currently goes into the Bay untreated.[12]

Neither existing Port policy nor the Waterfront Land Use Plan (WLUP) call for storm drainage from piers to be sewered into the City's system. However, development on piers could involve infrastructure improvements including storm drainage. The No Project Alternative, Alternative A, and Alternative B would likely be associated with increasing amounts of such infrastructure improvements. The acreage now draining to the Bay directly that could be subject to storm sewerage has been estimated to be about 7 acres under the No Project Alternative, about 42 acres under Alternative A, and just under 100 acres under Alternative B. There is adequate capacity in the City's collection system to accommodate these anticipated storm runoffs from all the subareas. In the northern China Basin area (Piers 48 and 50), the existing collection system is inadequate to handle current storm drainage flows to City design standards. Development of Mission Bay would involve upgrading of all affected sewers to adequacy. Increased drainage from piers in this area would not significantly add to the collection system load. Enlargement of the existing pump station and force main operated by the Port serving Piers 48 and 50 would probably be required to bring the flow from piers to City sewers.[13]

It is possible that new developments would require the installation of sewer lines and related infrastructure. The relevant construction activities are only disruptive for short time periods. Installation of new sewer lines for a block of construction, for example, would generally take one week.

Property Maintenance

Maintenance needs in the Project Area in the future would depend upon the change in activities or intensification of occupancies. In general, net increases in occupied space and activity levels ranslate to overall increases in wear and tear on properties, grounds, and piers, requiring a reater frequency of routine repairs as well as larger renovation projects. Therefore, the No Project Alternative would call for a modest increase in maintenance resources, Alternative A a omewhat larger increase, and Alternative B by far the largest maintenance budget relative to the reater intensity of land use. The Port's ability to fund maintenance needs could be limited under he No Project Alternative and possibly Alternative A if revenues were not sufficient, as has been he case in the recent past. Unused and underused facilities could deteriorate as a result, otentially leading to increasing disparities between maintenance resource needs and the ability o pay for them. Under Alternative B, the potential for sufficient revenues to pay for the higher vel of maintenance needs would also be higher due to rents and other income from high levels f cargo shipping and maritime and nonmaritime development. Also, the assumed replacement or upgrade of piers and building of new facilities would limit ongoing maintenance costs compared with incremental repairs of aging facilities that would more likely characterize the No Project Alternative and Alternative A.

All Alternatives would include some increase in maritime uses. Maintenance dredging would continue to occur in subareas with commercial and recreational maritime uses, under all Alternatives. See Section V.J., Environmental Impacts, Hydrology and Water Quality, for more discussion.

Solid Waste Management

The City's Solid Waste Program assumes a constant Citywide solid waste generation of 1,027,170 tons per year (same as in 1990), and of that 528,990 tons diverted from landfill (51.5 percent), and a disposal volume of 498,176 tons (48.5 percent) projected for 2010.[14] Much of the development forecasted under the EIR Alternatives would have occurred elsewhere in San Francisco if not on the waterfront; therefore, much of the predicted increase in solid waste generation would have occurred with or without the WLUP.

The City is obligated by State law to reduce the amount of waste going to landfill. Curbside recycling for residences is already part of the City's strategy to reduce that volume. In addition, in order to comply with another State law (Public Resources Code, Chapter 18, Section 42900 *et seq.*), all new development, improvements, and certain alterations, dating from September 1, 1993, would require space provided for recycling containers.[15]

The Sanitary Fill Company indicates that the present facility could handle the increase in solid waste introduced by any of the development alternatives. That increase, as part of the total projected for the City, is small and in itself would not have a substantial impact. However, it would add waste to the landfill, and further challenge the City in meeting its solid waste reduction goal of 50 percent.

IMPACTS OF THE NO PROJECT ALTERNATIVE

Fire Protection

Safety standards and features would improve in all areas with any level of development or renovation. In this sense, all areas would have at least small improvements in fire protection measures as the Port and Port tenants seek building permits for renovations and changes in use.

Police

The No Project Alternative would allow for an increase in population load of about 1,100 (based on new residential occupancy, and new recreational and commercial uses) along the waterfront. On the basis of the current ratio of police staffing to the population of San Francisco and the land uses that are expected under this Alternative, the Police Department projects an additional staffing requirement of about 13 (non-administrative) people to maintain current levels of service, for a cost of about $1,300,000. This increased demand could be met by reorganizing existing staff (adjusting schedules, redeploying officers), however, instead of new hiring.[16]

Schools

The San Francisco Unified School District uses a student generation rate of .203 per new housing unit, meaning that the 80 new units under the No Project Alternative would add about 16 new students to the district.[17]

Recreation/Open Space

Compared with the other Alternatives, relatively minor amounts of new recreation and open space would be created beyond those already programmed. Thus, additional open space and park maintenance needs under the No Project Alternative would be limited. Revenue increases o pay for open space maintenance would also be relatively limited.

Health Services

Residents of the 80 new units under this Alternative may require some services from their local neighborhood health clinic. The closest clinic to the Northeast Waterfront subarea may be the North Beach Clinic, although residents could use any other facility.

Some retail and other commercial activity is expected in the No Project Alternative. Fisherman's Wharf, the Northeast Waterfront, and the Ferry Building subareas would probably have the highest need of all subareas for restaurant and other retail food inspections. The increased need would be supported by the fees paid by the businesses.

Solid Waste Management

The City's Solid Waste Program estimates that in 2010 in the Project Area, the No Project Alternative would generate an increase of 1,579 tons of solid waste per year, including refuse and recyclables, over current amounts.[14]

IMPACTS PARTICULAR TO ALTERNATIVE A

Fire Protection

This Alternative would result in a moderate amount of new building development. Many existing buildings would have interim industrial uses. Those interim industrial uses as well as the long-term new uses would require permits from the Port and, as part of the permit process, could require renovation of each reused building's fire safety system. Additions such as new sprinkler systems, fire alarms or new exits could be added, improving the overall fire protection capabilities in the Project Area. A large amount of new permitting activity could require additional Fire Department staff, to keep up with the inspection demand. The Port pays the Fire Department for the one staff person that currently does all inspections.

Police

Alternative A would allow for an increase in population load (based on new residential occupancy, and new recreational and commercial uses) of about 5,580 persons. On the basis of the current ratio of police staffing to the population of San Francisco and the land uses that are expected under this Alternative, the Police Department projects an additional staffing requirement of about 64 (non-administrative) people to maintain current levels of service, for a cost of about $6,400,000. This could result in the need for a substantial shift in resources during certain days and hours depending on the land uses. This would affect regular patrols and special duty staffing.[16] Although this impact on San Francisco Police Department (SFPD) resources is substantial, Association of Bay Area Governments' (ABAG) projections suggest that if this development were not to occur in the Project Area, it would occur elsewhere in the City.

Therefore, the additional police staffing would represent a shift to the Project Area but not an increase over future needs based on estimated growth Citywide.

Schools

Alternative A would add about 47 new students.[17]

Recreation/Open Space

Alternative A would be expected to produce somewhat more new open space or parks than the No Project Alternative, but not as much as Alternative B. Thus, additional open space and park naintenance needs under this Alternative would be limited. Revenue increases to pay for open pace maintenance would also be relatively limited.

Health Services

Residents living in the new 230 dwelling units would be able to use one of the nine ieighborhood health clinics. Residents would go either to the nearest clinic or to the one where hey could get the earliest appointment.[18]

The greater the magnitude of future retail development, the more that the Bureau of Environmental Health Program would be affected. For example, the increase of retail stablishments in the Fisherman's Wharf, Northeast Waterfront, Ferry Building, and South Beach/China Basin subareas suggests a greater demand for retail food establishments and, onsequently, more inspections by environmental health inspectors. The increased program xpenses would be funded by fees paid by the businesses.

his Alternative includes growth in industrial and other commercial uses that could handle azardous materials. Since City ordinances control the handling of toxics by registration and nspection, many of these new businesses together would increase the demand for Toxic Program aff. Since the program is fee supported, new staff could be hired through the newly attained es.

Solid Waste Management

According to the City's Solid Waste Program, Alternative A would generate an increase of approximately 3,831 tons of solid waste per year.[14]

IMPACTS PARTICULAR TO ALTERNATIVE B

Fire Protection

Alternative B includes a relatively large amount of development and new activity in all subareas. Some of this development would involve demolition of older buildings or their renovation, reducing existing fire hazards they may pose. New retail, office, assembly and entertainment uses would draw many more people to the Project Area, and therefore new and reused buildings would require more fire safety features.

New industrial, shipping related, and recreation uses could pose greater hazards because of stored fuels and other toxics, but would require different Fire Department safety measures than the higher occupancy uses listed above. Special measures may be imposed by the Fire Department, related to the use or storage of particular hazardous materials. (The handling of hazardous materials is regulated by the Health Department. See Section IV.K., Environmental Setting, Public Services and Utilities, p. 296.) A large amount of new permitting activity could require additional Fire Department staff to keep up with the inspection demand. The Port pays the Fire Department for the one staff person who currently does all inspections. If more staff were needed, increased revenues to the Port from the higher level of development and associated leases as well as cargo shipping under this Alternative could help pay the cost.

Police

Alternative B would allow for an increase in population load (based on new commercial and recreational uses) of about 9,700 persons. On the basis of the current ratio of police staffing to the population of San Francisco and the land uses that are expected under this Alternative, the Police Department projects an additional staffing requirement of about 125 (non-administrative) people to maintain current levels of service, for a cost of about $12,500,000. This could result in the need for a substantial shift in resources during certain days and hours depending on the land uses. This would affect regular patrols and special duty staffing.[16] Although this impact on SFPD resources is substantial, ABAG projections suggest that if this development were not to occur in the Project Area, much of it would occur elsewhere in the City. To the extent the Project Area captures expected Citywide growth, the increased demand for police services would represent a shift to the Project Area but not an increase over future needs based on estimated growth. To the extent Alternative B involves growth that would not otherwise have occurred in San Francisco, there would be an increase in demand for police services beyond expected staffing requirements that are based on current Citywide growth projections.

Schools

Alternative B would not add any students at all.[17]

Recreation/ Open Space

Considerably more public access areas and other recreation and open space facilities (as promoted in WLUP policies and BCDC requirements) would be created in conjunction with the relatively large amount of new development associated with Alternative B. Revenues from new developments and increased cargo shipping would presumably fund the maintenance of the new recreation/open space amenities under this Alternative.

Health Services

Alternative B would add new retail uses to all subareas, suggesting some increase in retail food establishments. There would then be a need for additional environmental health inspectors. This program is almost entirely funded through permit fees.[19]

Alternative B would allow for the expansion and addition of industrial and maritime related uses. It is assumed that the increases in these activities would include more handling of hazardous materials. Businesses with such materials would be required to comply with City ordinances. Fees levied on these businesses would support associated City services.

Property Management

Alternative B, with the largest degree of maritime uses, would require the greatest amount of maintenance and new dredging over time, and so, the largest dredging budget. (The cost of in-Bay disposal for FY 1994-1995 was $3.85 per cubic yard. A 10 percent increase per year is expected.[20])

Solid Waste Management

Alternative B would generate an increase of 8,908 tons of solid waste. Solid waste would more than double in the Project Area under Alternative B compared with existing tonnage, and would represent about 1.6 percent of the City's total forecasted solid waste generation.[14]

NOTES - Public Services and Utilities

1 Cereghino, Ken, Port Fire Marshall, telephone conversation, May 3, 1995.

2 Kearney, Michael, Captain SFFD Support Services Division, responses to questionnaire March 20, 1995.

3 In general, researchers for the SFUSD assume in their document that existing facilities, with needed improvements, will be adequate to accommodate the majority of future enrollment. Recht Hausrath & Associates, "Justification of a Program of Impact Fees on New Development," December 8, 1992.

4 Morlin, Mike, Recreation and Park Department, telephone conversation, September 27, 1995.

5 Palafox, Jorge, Emergency Medical Services, San Francisco Department of Public Health, telephone conversation, April 6, 1995.

6 Article 20 of the Public Works Code (also known as the Maher Ordinance) requires that soil samples be collected and analyzed for a wide range of contaminants when 50 cubic yards of soil is disturbed bayward of the mean high tide line. The Toxics Program under the Department of Public Health implements this program.

7 Nakamura, Scott, San Francisco Department of Public Health, telephone conversation, July 31, 1995.

8 Cone, Sue, San Francisco Department of Public Health, telephone conversation, July 28, 1995.

9 Pelayo, Joe, City Distribution, San Francisco Water Department, telephone conversation, May 12, 1995. Based on development trends in San Francisco, and the fact that water conservation efforts have curtailed demand increases, and the location of the Project Area, the Water Department would be able to service growth under any of the Alternatives (though they cannot assess what the Fire Department's requirements may be). Although demand cannot be estimated accurately without knowing specific occupancies, industries that locate in San Francisco do not tend to be large water consumers. If that were to change, the Water Department might have to revise its conclusions.

10 Pelayo, Joe, City Distribution, San Francisco Water Department, telephone conversation, April 5, 1995.

11 Handa, Gene, DPW Clean Water Program, memorandum, June 30, 1995.

12 Handa, Gene, DPW Clean Water Program, conversation of June 29, 1995.

13 Handa, Gene, Department of Public Works, memorandum to Alice Glasner, Planning Department, January 22, 1996.

14 Keller, Kris, Solid Waste Administration, CAO's Office, correspondence of March 27, 1995.

15 Keller, Kris, Solid Waste Administration, CAO's Office, correspondence of March 20, 1995.

16 Lutes, Steven, San Francisco Police Department, letter, July 17, 1995.

17 Recht Hausrath & Associates, "Justification of a Program of Impact Fees on New Development," prepared for the San Francisco Unified School District, December 8, 1992.

18 Staff, Potrero Hill Health Center, response to telephone query, July 31, 1995.

19 Louie, Henry, San Francisco Department of Public Health, telephone conversation, July 24, 1995.

20 Jones, Roberta, Port of San Francisco to Kari Kilstrom, Port of San Francisco, internal memorandum, August 7, 1995.

L. ENERGY

IMPACTS OF ALL ALTERNATIVES

All Subareas

Construction

Construction-related energy requirements would include both direct and indirect energy components. Direct energy is directly consumed by an activity. For example, combustion of the refined petroleum products needed to operate construction equipment would be a direct energy expenditure. Indirect energy is consumed through sectors that provide inputs to an activity, rather than energy consumed by the activity itself. For example, the use of a steel beam in construction indirectly represents energy consumed in all of the industries that contributed to the production of the beam (e.g., energy consumed through mining and extraction of raw materials, manufacturing, and transportation). Indirect energy typically represents about three-quarters of total construction energy; direct energy represents about one-quarter of total construction energy.[1] With both direct and indirect energy, non-renewable resources supply most of the demand.

The estimates of land use changes that would occur under each of the EIR Alternatives (see Section V.B., Environmental Impacts, Land Use and Growth-Inducing Impacts) represent net changes in building space and open land area in use, by land use type. The estimates do not necessarily reflect the amount of new construction that would occur, because (1) the estimates are net of decreases in land uses within each subarea, and (2) it is not known how much of the net change in land use would be re-use of existing space and how much would be uses occupying new space. Therefore, it is not possible to quantify the consumption of energy for construction under each of the EIR Alternatives. The net change in building space can be used in this section as an indicator of the relative, qualitative magnitude of construction energy use under each Alternative. In general, Alternative A would likely involve substantially higher construction energy consumption than the No Project Alternative, and Alternative B would likely involve substantially higher construction energy consumption than Alternative A.

Table 52 shows the estimated operational energy that would be used under each of the EIR Alternatives. The estimates shown in Table 52 reflect the incremental change over existing

TABLE 52: ESTIMATED INCREASE IN ENERGY USE UNDER EACH ALTERNATIVE, 2010

Monthly Electric Consumption	No Project Alternative	Alternative A	Alternative B
Estimated total increase in electrical consumption	1.11 million kWh (11.1 billion Btu)	2.36 million kWh (23.6 billion Btu)	9.98 million kWh (99.8 billion Btu)
Daily Natural Gas Consumption			
Estimated total increase in natural gas consumption	9,300 therms (930 million Btu)	19,300 therms (1.9 billion Btu)	77,500 therms (7.8 billion Btu)
Annual Consumption			
Estimated total annual increase in natural gas consumption	3.39 million therms (339 billion Btu)	7.04 million therms (704 billion Btu)	28.3 million therms (2.83 trillion Btu)
Estimated total annual increase in electrical consumption	13.3 million kWh (133 billion Btu)	28.3 million kWh (283 billion Btu)	120.0 million kWh (1.20 trillion Btu)
Estimated total annual increase in petroleum fuel consumption	167,000 gallons (21 billion Btu)/a/	1.3 million gallons (161 billion Btu)/a/	5.0 million gallons (620 billion Btu)/a/
Estimated total annual increase in diesel and bunker fuel consumption	5.5 million gallons (760 billion Btu)/a/	5.6 million gallons (770 billion Btu)/a/	9.6 million gallons (1.33 trillion Btu)/a/
Estimated total annual operational energy consumption	**1.26 trillion Btu (268,000 barrels of oil)/a/**	**1.91 trillion Btu (430,000 barrels of oil)/a/**	**5.98 trillion Btu (1.39 million barrels of oil)/a/**

Natural Gas Consumption, All Alternatives (cf/sq.ft./mo)/b/	
Retail	2.9
Misc/Warehouse	10.2
Office	2.0
Hotel	4.8
Residential	4,011/unit

Electricity consumption, All Alternatives (kWh/sq. ft./yr)/b/	
Retail	13.55
Misc	10.50
Office	12.95
Warehouse	4.35
Hotel	9.95
Residential	5,626/unit

/a/ One gallon of petroleum fuel = 124,000 Btu; one barrel of oil = 5.2 million Btu (for gasoline), 5.8 million Btu (for diesel). A weighted average of 5.6 million was used for the total consumption.

/b/ This estimate was derived from land-use-specific energy rates published by the South Coast Air Quality Management District's CEQA Air Quality Handbook and PG&E gas consumption estimates. (1 therm = 100,000 Btu) (1 kWh = 10,000 Btu with conversion losses)

SOURCE: Environmental Science Associates

baseline conditions, assuming land use estimates for 2010. Additional information regarding electricity, natural gas, and petroleum fuel consumption under the EIR Alternatives is provided below.

Building and Facilities Energy -- Electricity. Operation of additional land uses would result in an increase in electricity consumption for lighting, heating, refrigeration, and industrial processing. Energy consumption would also increase due to increased motor vehicle trips.

Estimated electrical consumption in the Project Area would increase by approximately 1.11 million *kilowatt-hours* per month (kWh/month), or 11.1 billion Btu/month under the No Project Alternative (in 2010), 2.36 million kWh/month, or 23.6 billion Btu/month under Alternative A, and 9.98 million kWh/month, or 99.8 billion Btu/month under Alternative B. On an annual basis, electricity usage would increase by 13.3 million, 28.3 million, and 120.0 million kWh under the No Project Alternative and Alternatives A and B, respectively.

The need for construction of new transmission facilities or generating facilities to provide electricity would need to be assessed on a case-by-case basis when specific requirements of individual projects are known.

Building and Facilities Energy -- Natural Gas. Natural gas uses would be required primarily for space heating. New and remodeled buildings and facilities would generally be more efficient than older buildings in their use of natural gas. On the basis of current natural gas consumption estimates, natural gas consumption would increase by at least 9,300 therms per day (therm/day), or 930 million Btu/day under the No Project Alternative, 19,300 therms/day or 1.9 billion Btu/day under Alternative A, and 77,500 therms/day or 7.8 billion Btu/day under Alternative B. On an annual basis, natural gas use would increase by 3.39 million, 7.04 million, and 28.3 million therms under the No Project Alternative and Alternatives A and B, respectively.

The need for construction of new transmission generating facilities to provide natural gas would need to be assessed on a case-by-case basis when specific requirements of individual projects are known.

Petroleum Fuel Energy. The project would result in an increase in consumption of petroleum fuels relative to future baseline conditions. Consumption rates of petroleum fuels by motor vehicles in 2010 would be less than under existing conditions, however, because of a more-efficient vehicle fleet in 2010 (compared to now). Based on the number of vehicle trips[2] and estimated trip lengths in 2010 under the EIR Alternatives, annual gasoline consumption would be approximately 167,000 gallons under the No Project Alternative and 1.3 million and 5.0 million gallons under Alternatives A and B, respectively.

The project would also result in consumption of diesel and bunker fuels resulting from increases in marine vessel activity. Fuel consumption rates for passenger ships, cargo ships, and tankers were calculated based upon increases in vessel calls and upon operation assumptions and fuel requirements published by the Bay Area Air Quality Management District.[3] Annual diesel and bunker fuel consumption rates were calculated to be approximately 5.5 million gallons under the No Project Alternative and 5.6 million and 9.6 million gallons under Alternatives A and B, respectively (760 billion, 770 billion, and 1.33 trillion Btu, respectively, based on conversion factors of 42 gallons per barrel of oil and 5.8 million Btu per barrel).

Total Operational Energy Consumption

Considering all operational phase energy components (electricity, natural gas, and petroleum, diesel and bunker fuels), the project would consume energy equivalent to approximately 1.26 trillion Btu per year under the No Project Alternative, 1.91 trillion Btu per year under Alternative A and 5.98 trillion Btu under Alternative B.

IMPACTS OF THE NO PROJECT ALTERNATIVE

There are no additional energy impacts specific to this Alternative.

IMPACTS OF ALTERNATIVE A

Southern Waterfront Subarea

The proposed cogeneration facility on the Port site (Seawall Lot 344) is incorporated into EIR Alternative A. Under this Alternative, additional electricity would be generated and be available locally. See Chapter III, Project Description, for a description of the cogeneration facility.

The increase in energy use under Alternative A, approximately 1.73 trillion Btu per year, could be partially offset by the energy generation associated with the development of the cogeneration facility.

IMPACTS OF ALTERNATIVE B

There are no additional energy impacts specific to this Alternative.

NOTES - Energy

1 Hannon, *et al.*, "Energy and Labor in the Construction Sector," *Science*, Volume 202, 1978.

2 Wilbur Smith Associates, 1996.

3 Bay Area Air Quality Management District, *Base Year 1990 Emission Inventory, Source Category Methodologies,* October 1993.

M. HAZARDS AND HAZARDOUS MATERIALS

IMPACTS OF ALL ALTERNATIVES

All Subareas

Individual development projects under all Alternatives could involve future disturbance or excavation of materials known to be hazardous. Development also could result in increases in hazardous materials storage or use in the Project Area, as well as the disposal or treatment of hazardous wastes. Hazardous materials and hazardous wastes, if mishandled, have a potential to pose risks to the public; potential health and safety impacts could stem from interactions of workers or employees with hazardous wastes encountered during project construction or with hazardous materials used in the future.

This analysis focuses on potential area-wide impacts on public health and the environment related to contaminated soil or building materials, and to changes in hazardous material use, handling and storage, and hazardous waste generation associated with all Alternatives. The evaluation was made in light of the characteristics of the Alternatives, applicable regulations and guidelines, and current conditions in the Project Area. Although specific conditions in each subarea would vary when development commences, the impacts and eventual approach to mitigation would be consistent among all subareas. Each local project in the Project Area would be evaluated separately for public health and safety impacts at the time it is proposed.

Environmental Contamination

Hazardous materials have been used in the Project Area for years. As discussed in Section IV.M., Environmental Setting, Hazards and Hazardous Materials, beginning on p. 314, and in Appendix H, environmental contamination resulting from spills, leaks, contaminated fill, and other discharges has been documented. For a summary of known environmental conditions within each Waterfront Land Use Plan (WLUP) subarea, please refer to Section IV.M., pp. 316-320. Some of the contaminated parcels have been remediated, others have not been remediated as yet, and still other areas of contamination may exist but not have been discovered yet. If these areas are excavated, contaminated soil or groundwater could be encountered.

Soil contamination or other hazards are commonly detected by inspecting and searching public records for signs of environmental impairment at a subject property. This type of investigation is called a Phase I environmental assessment, site investigation, or site audit, and is performed independently by a California Registered Environmental Assessor or registered engineer. A broad-brush Phase I assessment has been carried out for the Project Area and is included as Appendix H.[1] Portions of the Project Area have been studied in more detail, as was described in Section IV.M., Environmental Setting. Whenever evidence of site contamination is found, additional data can be gathered by actually sampling and testing the soil for the suspected contaminant, as is required in the Project Area by San Francisco's Maher Ordinance.

If contamination at a specific project site is undetected, risks to workers and the public would be greater because risk-reducing precautions might not be taken during site development. Table 53 lists potential contaminant-related activities that typically occur during site work. The actual physical impacts of these activities would depend on many factors, including the types and properties of contaminants, concentration and amounts of contaminants, and the nature and duration of human exposure.[2]

TABLE 53: GENERAL TYPES OF POTENTIAL IMPACTS RELATED TO SITE CONTAMINATION

Project Activity	Possible Contaminated Materials	Areas of Potential Impact
Excavation, grading, and site preparation	Soil gases, soil, groundwater	Human health and natural environment
Site investigation	Soil, groundwater	Human health
Dewatering	Groundwater	Human health and natural environment
Underground storage tank closure	Tank, vapor, soil	Human health and safety
Site remediation	Soil gases, soil, groundwater	Human health and natural environment

SOURCE: Environmental Science Associates

Exposure to hazardous materials could cause various short-term or long-term health effects. The health effects of exposure to hazardous materials would be specific to each chemical. Possible health effects of exposure may be acute (immediate, or of short-term severity), chronic (long-term, recurring, or resulting from repeated exposure), or both. Acute effects, often resulting from a single exposure, could result in a range of effects from minor to major, such as nausea, vomiting, headache, dizziness, or burns. Chronic exposure could result in systemic damage or damage to specific organs, such as the lungs, liver, or kidneys. Birth defects and cancer are generally caused by chronic exposure. It was to prevent workers from being exposed to these types of health hazards that the Maher ordinance was passed.

For specific hazardous substances, potential health effects of exposure are described in detail in standard references.[3,4,5,6,7] General types of potential impacts are summarized in Table 53, p. 618.

Impacts of potential exposure to contaminated soil in the Project Area would be avoided by adherence to provisions of San Francisco's Maher Ordinance, which were summarized in Section IV.M., Environmental Setting, Hazards and Hazardous Materials, pp. 312-313. With one small exception along the Islais Creek Channel, the entire Project Area lies within the historic high-tide line of San Francisco Bay. As such, it is in the designated zone covered by the Maher Ordinance.

The Maher Ordinance would guide site investigations, site remediation, documentation, and disclosure. Development projects involving movement of more than 50 cubic yards of soil would have to carry out a hazards study that would identify and then remediate specific site contamination. The Maher Ordinance would, by definition, mitigate potential impacts of contaminated fill in the Project Area.

The Maher Ordinance also deals with contamination resulting from prior or current site uses by requiring a historic study to identify former activities likely to result in site-specific environmental contamination. Historically, many parcels along the Bay waterfront were subject to uses that caused contamination, sometimes severe. Generally, these kinds of activities included shipbuilding and various other maritime activities, railroads and rail yards, factories, lumber yards, industrial yards, petroleum storage facilities, underground storage tanks, junkyards, parking lots, and similar uses. Parcel-by-parcel Maher reviews that would identify sources of potential contamination that could be verified by subsequent soil testing would be performed for future development in the Project Area. Because of these future requirements, a parcel-by-parcel review was not conducted for this EIR analysis, and other than those sites identified in Section IV.M., Environmental Setting, specific sites contaminated by historic activities are not mapped.

Because the contents of underground storage tanks may be hazardous, materials stored in an underground storage tank that is unexpectedly uncovered, disturbed, or damaged during excavation could threaten the health and safety of site workers. As with a fuel spill from above-ground activities, a leaking underground storage tank could pose threats to groundwater resources and the environment, and could also pose a possible explosion hazard.

Some underground tanks have been removed from the Project Area, others are known to be present, and still others may be present but abandoned and undocumented. If an underground storage tank were discovered during future construction activities, it would be removed. Removal activities could pose both health and safety risks, such as the exposure of workers, tank handling personnel, and the public to tank contents or vapors. Risks posed by underground storage tanks would be minimized by closing the tank according to the guidelines required by the San Francisco Department of Public Health and the San Francisco Bay Regional Water Quality Control Board. Such requirements include removing and properly disposing of any remaining hazardous materials in the tank, having the tank removal supervised by regulatory agencies, testing the soil under the tank for contamination, recycling or disposing of the discarded tank, remediating any contaminated soil that may be found near the tank, and filing a tank removal closure report with the City.

Site remediation measures, in themselves, could have adverse impacts. During site remediation, workers, and possibly the public, could be exposed to chemical compounds in soils, soil gases, or groundwater. The public and the environment could be exposed to airborne chemical compounds migrating from a site under remediation. Accidents during transport of contaminated soils or groundwater could have the potential to expose the public and the environment to the chemical compounds. These potential impacts would be mitigated by following proper safety procedures during field work, as discussed in the following paragraphs.

Workers directly engaged in the sampling activity would face the greatest potential for exposure. The public could be exposed to contaminants if an accident were to occur during sample transport, or if access to the project site were insufficiently controlled. Because relatively small amounts of material are collected as samples, exposure to potential hazards during site investigation would be limited, and associated impacts would be localized. Construction activities would be planned and carried out in a manner that coordinates excavations, additional site investigations, and remediation activities.

Cleanup levels for soil and groundwater are determined on a case-by-case basis by the lead regulatory agencies (e.g., the Department of Toxic Substances Control, the Regional Water Quality Control Board, or the San Francisco Department of Public Health). These agencies can require cleanup to background levels or, alternatively, to health-based levels. To identify health-based cleanup levels, project sponsors would need to conduct a risk assessment to identify levels of chemicals that could be allowed to stay in the soil or groundwater without posing an unacceptable risk to public health or the environment.

For construction projects involving earthmoving or excavation, the individual project sponsor and the Department of Public Health would compare levels of chemicals identified in the soil to worker safety and hazardous waste criteria to identify the appropriate level of worker safety protection and determine whether any soil removed from the site would need to be handled as a hazardous waste. If dewatering activities are conducted as part of construction, the project sponsor and the Department of Public Works would compare the levels of chemicals identified in the groundwater to sewer discharge limitations in order to identify an appropriate disposal method and any necessary treatment.

Worker and public health and safety requirements would apply during remediation activities. The potential adverse impacts of remediation would be mitigated by legally required safety and hazardous waste handling and transportation precautions. Common worker safety precautions include protective clothing, site fencing, hazards briefings, worker training, and related procedures. For hazardous waste workers, federal Occupational Safety and Health Administration regulations mandate an initial 40-hour training course and subsequent annual training review. Additionally, site-specific training would be required for some workers. Procedures for protecting the public during remediation would be evaluated in mitigation plans reviewed by responsible agencies at the time of development. These measures, along with application of cleanup standards, would serve to protect human health and the environment during site remediation, thus minimizing remediation impacts.

Over the long term, remediating the Project Area would reduce or eliminate any health threats posed by hazardous wastes and prevent workers and the public from encountering such materials in the event of any future excavation. Removing any hazardous wastes that are toxic would also eliminate a potential local source of groundwater contamination, which would also be beneficial in the long run. Remediation and project implementation would substantially decrease the potential for future environmental damage by permanently removing sources of contamination. Proper handling and disposal of excavated materials would protect the environment and preempt potential health, safety, and environmental effects related to the contamination.

Hazardous Building Materials

Some older buildings in the Project Area could contain hazardous building materials. The most common hazardous materials found in older buildings are asbestos, polychlorinated biphenyls (PCBs), and lead-based paint. Potential hazards of these materials stem from improper handling or disposal. If any unidentified hazardous building materials were to remain in existing buildings, these materials could cause adverse health impacts if human exposure were permitted during demolition or renovation. Construction workers could be exposed to contaminants in buildings to be renovated or demolished, or they could inadvertently expose the public or the environment to those contaminants. Furthermore, hazardous materials could be inappropriately released to the environment as hazardous waste. Regulation of hazardous building materials is discussed in Appendix H.

Asbestos-containing building material is a common hazardous material found in older buildings. The fact that a building contains asbestos does not necessarily mean the building poses a hazard. In many cases, the asbestos within buildings is inaccessible, or it is sealed within other materials, such as floor tiles or wallboard, and thus unable to present an exposure hazard. Upon building renovation or demolition, however, asbestos fibers could be released unless proper precautions are taken. Government regulations prohibit emissions of asbestos from asbestos-related demolition or construction activities; require training, licensing, medical examinations, and monitoring of employees engaged in activities that could disturb asbestos; specify precautions and safe work practices that must be followed to minimize the potential release of asbestos fibers; and require notice to federal and local government agencies prior to beginning renovation or demolition capable of disturbing asbestos.

PCBs are another potentially hazardous class of compounds found in older buildings. Although the Environmental Protection Agency has banned the use of PCBs in new electrical equipment, various pieces of PCB-containing equipment could be found at older locations in the Project Area, including transformers, fluorescent light ballast, and old electrical equipment. Fluorescent light tubes are also considered hazardous because they contain mercury, a heavy metal.[8] The EPA requires that all PCB-containing transformers be registered with fire protection personnel, whether in use or in storage, and that they be inspected every three months. If a leak is found, it must be contained and eliminated.

Lead-based paint was commonly used prior to 1960, and this type of paint is present in many older buildings. Lead, a heavy metal, is toxic to humans, particularly to young children, and can cause a range of human health effects depending on the level of exposure. When lead-based paint adheres to the surface of the materials it covers, it poses little health risk and is not considered to be a hazardous waste.[8] Delaminated or chipped lead-based paint, however, can cause a potential human health threat if the paint chips are ingested. Typically, this is a threat only to small children, although lead dust might present a possible health risk to the general public during demolition of a structure covered with lead-based paint. Lead-based paint that has separated from a structure could also contaminate nearby soil.

Hazardous Materials Use

Implementation of all EIR Alternatives would indirectly promote increased handling of hazardous materials by new facilities that would occupy the Project Area. Hazardous materials in the Project Area would be used in accordance with City policies, which call for proper storage and handling of hazardous materials and endorse federal, State, and local laws and regulations that encourage and strengthen proper management and disclosure.[9] Applicable State and local regulations are discussed in Section IV.M., Environmental Setting, Hazards and Hazardous Materials, pp. 312-313, and in Appendix H.

Existing and potential industrial and commercial uses employ a wide variety of hazardous materials. In addition, maritime uses such as berths and terminals might have provisions for storage of fuel or other hazardous materials. Hazardous materials used by maritime uses include (among others) boat/ship fuels, antifreeze, paints, and thinners. Most commercial hazardous materials in common use pose no unwarranted risks with proper handling and storage.

Heavy industrial hazardous materials users (e.g., oil refineries, factories) are not anticipated in the Project Area under any of the Alternatives. With the types of businesses anticipated in the Project Area, hazardous materials typically encountered can be identified and discussed in a generic manner to describe, by way of example, their range of hazards. Hazardous properties are categorized into four types: toxic, ignitable, corrosive and reactive; many hazardous chemicals have properties that cause them to qualify for more than one category. Within the hazard categories, many chemicals pose special dangers due to tendencies to bioaccumulate in living tissue, or to generate toxic fumes when exposed to fire, or to cause cancer and birth defects. Examples of typical hazardous substances that could be found in the Project Area include common solvents that may be ignitable or toxic such as acetone, toluene, and chlorinated hydrocarbons; fuels and other petroleum products; reactive pressurized gas canisters; corrosive acids and bases such as sulfuric acid and sodium hydroxide; and toxic wood preservatives such as creosote.

Dangerous properties of some common hazardous materials are summarized in Table 54. Information was compiled from standard technical references.[3,4,5,6,7] The hazardous chemicals listed in Table 54 are not intended to be definitive for hazardous materials to be used in the Project Area, but rather are meant to provide representative examples of the range of hazardous materials possible, and their effects.

Hazardous materials used in the Project Area would not be expected to create hazardous conditions demonstrably different from conditions already existing in the area or in commercial districts of the City as a whole. Existing regulations, notably San Francisco's Hazardous Materials Ordinance, would promote proper control and handling of hazardous materials.

Hazardous Waste Generation

None of the EIR Alternatives would be likely to affect routine generation of hazardous waste in any meaningful manner. A small but unquantifiable change in hazardous waste generation could occur, but the change could be either an increase or a decrease. Hazardous wastes generated by maritime uses (such as waste oil and oily wastes) would increase with an increase in maritime activity. Objectives of hazardous waste management in the City and County of San Francisco are set forth in the City's Hazardous Waste Management Plan.[9] Two of the primary goals of the City are source reduction and proper management of waste from small businesses, which would apply in the Project Area.

California took steps to reduce commercial hazardous waste generation by passage of the Hazardous Waste Source Reduction and Management Review Act of 1989 (SB 14). SB 14

TABLE 54: DANGEROUS PROPERTIES OF TYPICAL HAZARDOUS MATERIALS

Hazardous Material	T	C	F	R	D	B	G
Acetone	√		√				
Benzene	√		√				√
Carbon tetrachloride	√				√		√
Chloroform	√				√		√
Ethylene glycol			√		√		
Fuels and lubricants	√		√		√		
Lead compounds	√					√	√
Methylene chloride	√				√		
Propane canisters			√	√			
Sodium hydroxide	√	√		√	√		
Sodium hypochlorite solution	√	√		√			
Sulfuric acid	√	√		√	√		
Tetrachloroethylene	√				√	√	√
Toluene	√		√		√	√	
1,1,2-Trichloroethane (TCA)	√				√		√
Trichloroethylene (TCE)	√		√		√	√	√
2,4,6-Trichlorophenol	√				√	√	√
Xylenes (3 isomers)	√		√		√		

Key to dangerous properties:

T = Toxic; poisonous; effects may be acute or cumulative.
C = Corrosive; chemically hazardous upon contact.
F = Flammable; fire or explosion hazard.
R = Reactive; can cause immediate physical damage if improperly handled.
D = Decomposes or reacts upon exposure to heat or fire to form toxic fumes.
B = Bioaccumulates in living tissue.
G = Carcinogen; known to cause cancer or birth defects.

SOURCE: Environmental Science Associates

contains provisions designed to reduce generation of hazardous waste at its source, reduce release of chemical constituents to the environment, and provide documentation of hazardous waste management information for use by state and local governments. Hazardous waste generators meet those goals by preparation of source reduction evaluation plans and hazardous waste management performance reports.

New operations in the Project Area would be required to comply with provisions of SB 14, as applicable, to minimize commercial waste generation. Source reduction and waste minimization in the Project Area might substantially offset any project-related increase in hazardous waste generation. It is possible that total hazardous waste generation in the area would decrease in future years, even with additional development.

Cumulative Considerations

Adverse cumulative effects would not result from any of the EIR Alternatives. Impacts caused by the presence or remediation of environmental contamination or hazardous building materials are localized in nature; therefore, only those persons directly exposed to the contaminants or hazardous materials would be affected. For this reason, for cumulative remediation projects to present a cumulative impact, unrelated projects must be in close proximity to one another, which would not be the case in San Francisco. Similarly, impacts related to routine handling and storage of hazardous materials are local in nature. Handling and storage of hazardous materials in the Project Area would not be expected to result in cumulative impacts due to the localized nature of such effects. In addition, the primary effects of contaminated site remediation would be beneficial to the environment, as discussed above.

IMPACTS OF THE NO PROJECT ALTERNATIVE

Under the No Project Alternative, the potential risks to workers and the public from site contamination, underground storage tanks, site remediation and demolition of buildings with hazardous materials would mostly be avoided, because it is anticipated that little new development would occur (in most subareas). Conversely, the area-wide beneficial impact of environmental cleanup would also not occur. Some impacts could occur within the Northeast Waterfront subarea, where new development is anticipated and where one or more bulkhead buildings could be demolished. Hazardous materials usage associated with ship repair would be discontinued in the South Beach/China Basin subarea. Hazardous material usage associated with general industrial development could occur in the Southern Waterfront subarea. Individual development projects under this Alternative (and the other Alternatives) would still be subject to San Francisco's Maher Ordinance, the City's Hazardous Materials Ordinance and the various regulations covering abatement of demolition building materials.

IMPACTS OF ALTERNATIVE A

Due to the enforcement of San Francisco's laws governing hazardous materials handling and hazardous waste cleanup that would occur with the project, differences among the various alternatives related to public health and safety are not significant. Some distinctions can be drawn, however, on the basis of the differing types and intensities of use within the subareas. Under Alternative A, the potential risks to workers and the public from site contamination, underground storage tanks, site remediation, and demolition of buildings with hazardous materials generally would be less than under Alternative B, because it is estimated that the emphasis of development would be on adaptive reuse of existing building space and open land area. Conversely, the area-wide beneficial impact of environmental cleanup would also be less than under Alternative B. This would be the case throughout all five subareas.

The greater amount of residential development that would occur under this Alternative would require that the cleanup of some sites meet higher standards. Residential development is assumed to occur in the Northeast Waterfront and South Beach/China Basin subareas, and could occur in the Fisherman's Wharf subarea.

Impacts related to increased industrial use of hazardous materials could occur in the Southern Waterfront subarea, where general industry, light industry, and maritime support would be slated to increase, and in the South Beach/China Basin subarea, where the Port's maintenance facilities would remain (with local-serving uses potentially developed nearby), and where industrial space would be developed south of China Basin Channel. Existing maritime support uses would decrease in the South Beach/China Basin subarea, however, which would act in opposition to the increases in light industrial use in that subarea. As with the No Project Alternative, hazardous materials usage associated with ship repair would be discontinued in the South Beach/China Basin subarea. Hazardous materials usage associated with light and general industrial development could occur in the Southern Waterfront subarea (where there would be a substantial net increase in such uses). Industrial uses would decrease in the Northeast Waterfront subarea and remain unchanged in the Fisherman's Wharf and Ferry Building subareas.

IMPACTS OF ALTERNATIVE B

Under Alternative B, the potential risks to workers and the public from site contamination, underground storage tanks, site remediation, and demolition of buildings with hazardous materials would be generally greater than under Alternative A or the No Project Alternative, because it is estimated that Alternative B would involve the greatest amount of new development. The differences, however, would not significantly affect potential impacts to public health or safety. Conversely, the area-wide beneficial impact of environmental cleanup would be most likely to occur under Alternative B.

Alternative B would involve the highest level of water-related uses, including container and other cargo shipping, ferry and excursion terminals and activity, historic ships, water taxis, fishing industry, cruise terminal, and water recreation. Potential impacts related to these uses (hazardous materials usage and hazardous waste generation) could therefore be greater under Alternative B than the other Alternatives. The cargo shipping activity would occur south of China Basin Channel; but otherwise industrial use would generally decrease in the South Beach/China Basin subarea. Potential impacts related to ship repair would continue to occur in the South Beach/China Basin subarea. Water-related activities would occur throughout the Project Area. A slight increase in light industrial use would occur in the Fisherman's Wharf subarea, but a decrease would occur in the Northeast Waterfront subarea. The Southern Waterfront subarea would incur the largest increase in maritime support and cargo shipping of any subarea under this Alternative. No significant differences among Alternatives related to public health and safety would be evident in the Ferry Building subarea.

(Impacts related to dredging and contamination of Bay sediments are discussed in Section V.J., Environmental Impacts, Hydrology and Water Quality, pp. 592-593.)

Alternative B would involve estimated net decreases in light industry and general industry, so potential impacts related to these uses would be less than under Alternative A.

NOTES - Hazards and Hazardous Materials

1 Vista Environmental Information, Inc., "Vista Special Report: San Francisco Waterfront," prepared for Environmental Science Associates, November 14, 1994.

[2] Human health or safety risks, if any, posed by the presence of contaminants can be quantified only with a formal health risk assessment based on detailed information about contamination, construction and remediation activities, and planned future land use.

[3] Budavari, Susan, Ed., *The Merck Index: An Encyclopedia of Chemicals, Drugs, and Biologicals,* 11th Edition, Merck & Co., Inc., 1989.

[4] Howard, P.H., *Handbook of Environmental Fate and Exposure Data for Organic Chemicals, Volume I: Large Production and Priority Pollutants,* Lewis Publishers, Chelsea, Michigan, 1989.

[5] Howard, P.H., *Handbook of Environmental Fate and Exposure Data for Organic Chemicals, Volume II: Solvents,* Lewis Publishers, Chelsea, Michigan, 1990.

[6] Sax, N.I., and R.J. Lewis, *Dangerous Properties of Industrial Materials,* 7th Edition, Van Nostrand Reinhold, New York, 1989.

[7] Sittig, M., *Handbook of Toxic and Hazardous Chemicals and Carcinogens,* 2nd Edition, Noyes Publications, Park Ridge, New Jersey, 1985.

[8] California Department of Toxic Substances Control, Regulation Guidance: "Fluorescent Light Tubes and Lead Painted Construction Debris," Office of Scientific Affairs, Waste Evaluation Unit, August 19, 1993.

[9] City and County of San Francisco, *Hazardous Waste Management Plan,* Office of the Chief Administrative Officer, Solid Waste Management Program, February 1992.

N. HISTORIC ARCHITECTURAL RESOURCES

It is difficult to determine the precise implications that adoption and implementation of the Waterfront Land Use Plan (WLUP) would have for every significant and potentially significant historic architectural resource in the Project Area. The Plan goals which most explicitly refer to historic architectural resources are the ones that state: "Improvements should respect and enhance the waterfront's historic character, while also creating new opportunities for San Franciscans to integrate Port activities into their daily lives" (p. II-5, 35)[1], and "The design of new developments should be of exemplary quality and should highlight visual and physical access to and from the Bay, while respecting the waterfront's rich historic context and the character of neighboring development" (p. II-6, 36). Within these goals are implicit the Plan's suggestion that "protection of the waterfront's unique historic and architectural setting and resources" (p. II-5, 36) would be balanced against other, often competing, goals and objectives.

The attempt to balance historic preservation objectives with potentially competing planning objectives is nothing new, and many existing plans which influence development along San Francisco's waterfront also attempt to strike that balance. For example, BCDC's Total Design Plan for Piers 7 through 24 balances preservation of bulkhead buildings (suggested for Piers 1, 1½, 3, and 24) with the desire for more views of the water, to be achieved by altering the bulkhead building at Pier 5 to remove its northerly portion and open up its central archway.[2] Adoption of the WLUP would likely result in or allow similar trade-offs, involving the preservation of some resources, and potentially the substantial alteration or demolition of others.

In general, some of the land use policies proposed in Chapter 3 of the WLUP would tend to result in the retention of existing building stock (both historic and contemporary), while other policies would tend to emphasize revitalization and reuse of Port properties, possibly at the expense of existing (including historic) facilities. These general tendencies are presented below:

- The protection of existing maritime uses (p. III-5, 44 of the WLUP) and the enhancement or expansion of maritime uses (p. III-6, 45) would tend to benefit historic resources in most instances, because they would tend to use existing facilities and/or would occur where no significant or potentially significant historic architectural resources have been identified. These policies could negatively affect resources if incorporation of new public access improvements or new commercial- and recreation-oriented maritime activities north of China Basin would result in alteration or demolition of identified resources, or if existing or new maritime uses would result in substantial changes to the San Francisco Yard (Union Iron Works), as discussed under the Southern Waterfront heading below.

- Policies for transitional maritime areas (p. III-7, 46) would generally tend to benefit historic resources as long as existing facilities were maintained in use, and would negatively affect historic resources if new uses required substantial alteration or demolition of identified resources, as discussed under the Northeast Waterfront heading below.

- Residential policies (p. III-12, 52) would generally have few effects on historic architectural resources because residential development would be limited to seawall lots where few significant or potentially significant historic resources have been identified. Residential construction on vacant sites within the locally designated North East Waterfront Historic District would require Certificates of Appropriateness under Article 10 of the City Planning Code, which would tend to minimize substantial changes affecting the overall significance or integrity of the District.

- Some permitted commercial uses on piers would clearly provide incentives for the retention and reuse of historic resources, such as the allowance of "general office" use in buildings listed in the National Register and in pierhead/bulkhead buildings (p. III-16, 53), which would require amendments to certain BCDC policies. Other permitted commercial uses would benefit historic resources if they encouraged the adaptive reuse of identified structures, and would negatively affect historic resources if they required or encouraged substantial alteration or removal of existing structures.

  Under existing requirements of BCDC's Bay Plan, long-term permitted uses on piers that require seismic or structural upgrades, such as water-oriented commercial recreation or assembly and entertainment, could result in demolition or substantial alteration of pier sheds because of the rule that requires reserving 50 percent of the area of the existing pier for public access (the "replacement fill policy"), which could be accomplished by leaving the 50 percent as open water. This requirement has tended to preserve pier structures by limiting the economic attractiveness of major structural upgrades and might contribute to neglect and deterioration of these structures under the No Project Alternative. If, as recommended in the WLUP, amendments to the Bay Plan increase the feasibility of developing commercial recreation or assembly-entertainment uses on piers requiring substantial repairs or structural upgrades, these pier structures could be more feasibly rehabilitated and reused. Preservation and reuse of pier sheds requiring structural work would not be guaranteed, however, and the same change in policy that could encourage their reuse, could in other cases lead to insensitive alterations, partial demolition, or demolition of pier sheds. As noted in Chapter III, Project Description, p. 45, and Section V.A., Public Plans, Policies, and Regulatory Agencies Comparison, p. 392, the Port may propose amendments to Part V of the Bay Plan that could provide an incentive for the removal of existing piers by allowing greater flexibility in reconfiguration of new piers for bay-oriented commercial-recreation use.

  In general, commercial land use policies that "seek new commercial developments on . . . piers . . . that generate sufficient revenue to finance . . . improvements included in the projects . . ." (p. III-18, 57) and that envision "major developments on waterside properties . . . " (p. III-19, 58) tend to emphasize new development, which may occur at the expense of existing historic resources. Policies which "promote architectural excellence in the design of new commercial development in a manner that is sensitive and compatible with the existing building scale, and architectural and historic character of surrounding development" (p. III-20, 59) also emphasize new development, but would encourage contextual designs.

Development of the Urban Design Guidelines called for in Chapter 3 of the WLUP (p. III-20, 58) would likely provide some specifics about preservation tasks deemed feasible (and buildings worthy of preservation), and buildings that could be sacrificed to meet other planning objectives. At a minimum, the Urban Design Guidelines would "identify significant pierhead and other historic resources that should be preserved" (p. II-7, 36), though it is impossible to predict the success of the guidelines in identifying and ultimately achieving the preservation of significant and potentially significant resources.

- Interim use policies which "promote productive use of piers, pierhead and bulkhead buildings on an interim basis, instead of allowing those facilities to stand vacant" (p. III-24, 62) generally imply that existing facilities would be retained and reused with a minimal amount of tenant improvements, but do not necessarily require retention of existing buildings, and would permit demolition and construction of new facilities south of China Basin (p. III-27, 64).

SUBAREA OBJECTIVES AND PROJECTED DEVELOPMENT UNDER EACH ALTERNATIVE

In general, any development proposal that would result in substantial alteration or demolition of a significant architectural resource (building or district) would have a significant adverse effect on the environment. The potential effects of projected development under each alternative on significant resources identified in Tables 21 and 22 of Section IV.N., Environmental Setting, Historic Architectural Resources, pp. 328-329, are presented below, to the extent feasible. The discussion below also considers potential effects on historic architectural resources which have not been formally designated, but which have been identified as potentially significant. These resources are identified in Figures 45 and 46 of Section IV.N., pp. 332 and 334, and in Appendix I, and are treated the same as significant resources due to the general plan-level of analysis and decision-making involved in review and consideration of the WLUP. In contrast to development projects that involve one specific site and its historic architectural resources, the WLUP provides an opportunity for a comprehensive and considered evaluation of the potential for a cumulative loss of resources. With unlimited resources, this evaluation could have incorporated a comprehensive historic resources survey of the Project Area, similar to the endeavor undertaken prior to adoption of the Downtown Plan and Article 11 of the City Planning Code. Instead, this evaluation makes use of existing surveys and designations described in Section IV.N., Environmental Setting, Historic Architectural Resources, pp. 324-336, and like the Mission Bay Plan EIR, considers potential impacts on this basis. In the context of a plan level analysis, it is impossible to conclude that substantial changes or demolition of potentially significant resources are not significant in the absence of a comprehensive evaluation of the resource's significance.

Given the general level of analysis that is feasible at present, further research and analysis may be required prior to specific development proposals affecting resources identified in Figures 45 and 46 of Section IV.N., or in Appendix I. In the case of some resources, that additional analysis would need to focus on whether resources are indeed significant and what qualities/features contribute to that significance. In other cases, additional analysis would need to determine whether changes proposed would constitute substantial and adverse changes to the resources, or whether they would constitute acceptable changes that would not substantially affect the resources' significance.

Fisherman's Wharf Subarea

Land use objectives for the Fisherman's Wharf subarea tend to emphasize enhancement of existing fishing operations and public access, with the possible addition of revenue-generating (i.e., commercial) uses within and adjacent to the Fisherman's Wharf Mixed-Use Opportunity Area (WLUP, p. IV-7, 82). Each Alternative assumes preservation of Hyde Street Pier and the Pier 45 bulkheads and sheds (WLUP, p. IV-2, 73), some of which have recently been upgraded. Alternatives A and B assume development pressure on Seawall Lots 301, 302, 303, 311/312, 313 and on the Pier 49 area. No significant or potentially significant resources have been identified in these areas, although the "character and charm of Fish Alley" is identified in the Plan (WLUP, p. IV-3, 75), and some of the 50-year-old or older "structures of note" identified in preliminary drafts of the cultural resources component prepared for a Fisherman's Wharf area plan could be altered or demolished. (See Appendix I for a list of these "structures of note.") All alternatives assume partial removal of some piers in this subarea, although it is not known which piers would be affected, and whether Pier 45 structures or the Ferry Arch would be among them.

Northeast Waterfront Subarea

Land use objectives for the Northeast Waterfront subarea tend to emphasize pursuing a mix of uses on piers transitioning away from cargo-related use, and on realizing the development potential of seawall lots. Each alternative assumes development on some or all seawall lots currently used for surface parking and a gas station, and assumes different intensities of development pressure within the boundaries of the Northeast Waterfront Historic District. Spill-over development pressures could jeopardize "compatible" buildings outside of the Project Area, and plan adoption could result in new development on vacant sites within the Project Area that could change the character of the District. While development standards acknowledge the need for compatible development (WLUP, p. IV-27), and the Certificate of Appropriateness review process prescribed by Article 10 of the City Planning Code would tend to minimize adverse changes, it is possible that development pressures could lead to substantial changes to character-defining features of the District, particularly under Alternative B, which assumes up to 575,000 square feet of assembly/entertainment/recreation uses in this subarea, expanded cruise ship activity, about 60,000 net new square feet of retail use, and about 200 hotel rooms.

In addition to the Northeast Waterfront Historic District, significant and potentially significant historic architectural resources within the subarea include pier sheds, pierheads, and bulkhead buildings at Piers 9, 15, 19, 23, 29, 31, 33, and 35, the Beltline Railroad Roundhouse, and the Beltline Railroad Annex. While the issue of preserving Piers 31, 33, and 35 pierhead building facades is specifically referred to, and responsibility for addressing this issue is assigned to the proposed urban design guidelines (WLUP, p. IV-25, 101), it is not possible to predict whether development projections would involve specific proposals that could lead to substantial alterations of these or other buildings. The No Project Alternative assumes opening up one or more bulkhead buildings for increased views to the water.

Commercial use of pier structures would tend to benefit historic resources if they encouraged the adaptive reuse of those structures. As long as existing facilities were maintained in their current use, existing resources would tend to be preserved; new, maritime or non-maritime uses that would require substantial alteration or demolition of identified resources could significantly affect the environment.

Ferry Building Subarea

Land use objectives for the Ferry Building subarea call for preservation and reuse of the Ferry Building and the Agriculture Building (WLUP, p. IV-31, 105), and tend to emphasize the expansion and logical organization of public access areas, views, and transportation-related facilities. The WLUP discusses the "prominence" of pierhead and bulkhead buildings of Piers 1 through 5, and indicates the possible removal of some part of existing structures to open up views of the Bay (WLUP, p. IV-32, 106). Additional discussion is called for in the proposed urban design guidelines. Alternative B assumes that piers in this subarea would be physically reconfigured, although it is not known which structures would be affected.

Some limited changes to pier, pierhead, and bulkhead structures in this and other Plan subareas would be unlikely to constitute a significant environmental effect because of the number of other such resources in the Plan area. Other changes, or groups of changes, could substantially affect the significance of resources, and would therefore constitute a significant environmental effect. Specific proposals for alteration or demolition would have to be analyzed to determine their effect on historic building fabric and on the overall collection of potentially significant resources identified in Figure 46, Section IV.N., p. 334, and Appendix I. Also, after a number of such changes, the collection of resources may be diminished to the point where further changes, while potentially limited in scope, would constitute a significant environmental effect.

South Beach/China Basin Subarea

Land use objectives for the South Beach/China Basin subarea emphasize the preservation of existing maritime uses (p. IV-45, 120), new development in the vicinity of Piers 22½, 24, 26, and 28 in the Rincon Pier Mixed Use Opportunity Area (p. IV-53, 130), new development in the vicinity of Piers 30-32 and 34 in the Bryant Street Pier Mixed Use Opportunity Area (p. IV-54, 132), and expansion of water-related activities and small commercial uses in the South Beach Harbor Mixed Use Opportunity Area at Piers 36, 38, 40, and the South Beach Harbor (p. IV-56, 133). Objectives also discuss uses in the vicinity of Pier 46B, and in the area of existing maritime or maritime expansion sites south of (and including) Pier 48.

The "presence" of pierhead buildings at Piers 26, 28, and 38 is acknowledged by the WLUP, along with the desire to "adapt" them "into new pier uses, if feasible and unless otherwise indicated by the urban design and historic preservation guidelines." Also, new "high quality design" is called for in "new structures on other Piers" (p. IV-52, 124). A specific development standard (p. IV-53, 131) calls for preservation and renovation of pierheads on Piers 26 and 28 (again, "if feasible" and "unless otherwise indicated" in the proposed urban design plan). No such standard addresses the pierhead at Pier 38.

Each Alternative would include development on some or all currently vacant seawall lots, and assumes different intensities of development pressure on these sites and adjacent piers. Significant and potentially significant resources in the South Beach/China Basin subarea include pierheads, bulkheads and sheds at Piers 26, 28, 38, and 48, and the Fireboat House/Pier 22½. All of these resources, with the likely exception of Pier 48, would be at risk from development pressures assumed under Alternatives A and, especially, B. (The No Project Alternative projects little development in the north of the subarea where these resources are located.) Because the area south of the Ferry Building includes so few remaining pierheads, bulkheads and pier sheds, substantial alteration or demolition of one or more of the remaining resources could be considered a significant environmental effect and could affect the overall character of the South Beach/China Basin subarea.

Southern Waterfront Subarea

Land use objectives for the Southern Waterfront subarea emphasize the retention and expansion of existing maritime activities, along with the provision of open space and recreation areas. The description of the Pier 70 Mixed Use Opportunity Area recognizes that "the preservation and adaptive reuse of the historic Union Iron Works buildings in this [mixed-use opportunity] area will pose a considerable challenge" (p. IV-70, 154), and development standards propose permitting non-maritime land uses "that result in preservation and adaptive reuse" of the three identified buildings, and respect "the work-a-day qualities of the industrial setting" (p. IV-71, 154). Standards proposed for an adjacent existing maritime area and maritime expansion area suggest interim use of unimproved space or empty buildings (p. IV-73, 156).

It is unclear from the WLUP just which Union Iron Works buildings are called out as historic, and would therefore be permitted to house non-maritime uses. Similarly, while permission of non-maritime uses would provide some flexibility for reuse of the buildings, it is unclear whether this incentive would be sufficient to ensure their preservation. These buildings and buildings not included in the Pier 70 Mixed Use Opportunity Area (the more utilitarian structures associated with Union Iron Works) could be altered or demolished if there is sufficient development pressure associated with commercial uses in the Mixed-Use Opportunity Area or with maritime uses in the Existing Maritime and Maritime Expansion areas.

Some changes within the Union Iron Works area, identified as the "San Francisco Yard" in the Southern Waterfront Survey (see Section IV.N., p. 330), would likely be possible without harming significant buildings or groupings of buildings. To determine whether specific changes proposed in the future would be significant or not, additional analyses would be required. These analyses would have to better define the limits of the San Francisco Yard district, describe the physical condition of buildings identified in the Southern Waterfront Survey, and describe changes that would be acceptable without compromising the overall significance or integrity of the district.

NOTES - Historic Architectural Resources

[1] Page references to the WLUP in this section are provided for both the draft WLUP published January 1995, and the draft WLUP republished April 1996.

[2] Bay Conservation and Development Commission, *Total Design Plan*, pp. 5-7.

O. ARCHAEOLOGICAL RESOURCES

In accordance with the California Environmental Quality Act (CEQA) Guidelines, potential damage to or disturbance of significant archaeological or historical resources, resulting from proposed projects and land use changes, would be considered a significant impact. A significant cultural resource is a location that meets one of the following criteria:

A. Is associated with an event or person of:

   1. Recognized significance in California or American history, or
   2. Recognized scientific importance in prehistory;

B. Can provide information which is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable or archaeological research questions;

C. Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind;

D. Is at least 100 years old and possesses substantial stratigraphic integrity; or

E. Involves important research questions that historical research has shown can be answered only with archaeological methods.

Potential impacts on buried cultural resources are a function of the likelihood that such archaeological resources are located in the Project Area, and the likelihood that such resources, if present, would be uncovered, damaged or destroyed by excavation or other development activities under the EIR Alternatives. Due to the size of the Project Area, its rich and complicated physical and cultural history, and the generic variety of projects anticipated under the Alternatives, it is impractical if not impossible to confirm or eliminate archaeological impacts on a lot-by-lot or project-by-project basis. Some generalizations, however, can be made for each EIR Alternative on a Plan subarea basis.

Prehistoric archaeological resources are generally not expected to occur in the Project Area as, with very few exceptions, the area was underwater in recent prehistoric times and is nearly all composed of historic and modern fill placed from about 1850 through the 1960's. The places where the Project Area encounters or approaches the original shoreline are limited, and for the most part were steep slopes where prehistoric habitation and deposits would not normally be expected, or would likely have been removed or destroyed by early quarrying and grading. There is a possibility that prehistoric cultural deposits may exist beneath the current and historic

Bay floor (and therefore also beneath the historic fill in the Project Area), as a rising sea level in prehistoric times inundated the local area which may have been previously inhabited. The potential for deeply buried deposits of this nature beneath the bay muds in the Project Area is unknown; however, it is possible that such potential resources along this Bay margin would have been destroyed due to erosion and wave activity, as well as dredging and wharf construction during historic and modern times. As no prehistoric resources are expected to exist in the Project Area, no impacts to these resources would be expected due to development under the Waterfront Land Use Plan (WLUP), although the possibility cannot be eliminated. Any resources, either prehistoric or historic, existing bayside of the existing shoreline would likewise have been subject to disturbance by erosion and past dredging and construction activities. Offshore portions of the Project Area have always been underwater during historic times and were not part of this historic fill area; no significant historic resources would be expected in these areas. However, if such submerged resources do exist, they could be affected by pier removals and installations and any other substantial offshore soil-disturbing activity. Meaningful identification and recovery of such material, if any did exist, would be questionable, diminishing the potential value of these resources.

Similarly, historic resources from the Spanish and Mexican periods are not expected to occur in the Project Area, which was likewise largely submerged beneath the Bay waters at the time, and no significant habitation in the project vicinity is known to have occurred which could have left significant cultural deposits offshore. There is a slim possibility that remnants of an undocumented shipwreck from these periods could be located in or near the Project Area; however, there is no reasonable way to anticipate if and where such resources may be located.

Significant archaeological resources from the early American, pre-Gold Rush historic period would not be expected to occur in the Project Area and therefore development under the Plan would not be expected to impact resources from these periods. Sustained intensive activity of the type which would normally be expected to leave archaeological evidence did not occur in the Project Area during this period. There is a slim possibility that remnants of an undocumented shipwreck from this period could be located in or near the Project Area; however, there is no indication that such a wreck does exist.

However unlikely, the possibility cannot be eliminated that unexpected archaeological resources from prehistoric or historic periods prior to the Gold Rush might occur in the area and potentially be disturbed by excavations within the Project Area. Mitigation measures are available and are proposed as part of this EIR to minimize this possible impact.

Portions of the Project Area have a high potential for containing significant historical archaeological resources in buried cultural remains from the Gold Rush period through the early part of the 20th century. These resources are known and/or expected to occur primarily in the northern and central portions of the Project Area, from the Channel Street section of the South Beach/China Basin subarea north through the Fisherman's Wharf subarea. If substantial excavation under the Plan were to occur in some portions of these areas, there could be a high potential of encountering buried ship hulks, and warehouse, wharf and refuse deposits. Intact archaeological deposits from the Gold Rush period would generally be considered to be significant resources. The remainder of the Project Area to the south of Channel Street and China Basin is much less likely to contain significant cultural remains as it was filled and developed at a much later time, up to as recently as the 1960's.

The potential impact of the EIR Alternatives on these resources is in large part a function of the amount of excavation that can be anticipated under the proposed Plan. Much of the Project Area has been under some form of urban development since the late 1800s, and is now occupied by buildings, public roadways, or other forms of pavement and built uses. It is reasonable to assume, as the WLUP identifies, that many of these existing structures would remain intact, or be renovated and used under the Plan, resulting in no excavation or ground disturbance that could affect buried cultural resources. In areas where little to no excavation is anticipated under, or would otherwise be encouraged by, the WLUP, essentially no impact to archaeological resources would be expected.

Since the Alternatives consist of various speculative development scenarios rather than an all-inclusive list of proposed projects, it is not possible to specifically identify the impacts of the Alternatives on archaeological resources. In general, the more excavation or soil-disturbing activity an Alternative would encourage, particularly in the more sensitive areas from China Basin north, the higher the potential for significant archaeological impacts to occur. Some general comparisons can therefore be made between Alternatives.

Aside from the projects assumed for all Alternatives, the No Project Alternative would involve relatively little new development and, consequently, would have a relatively lower potential to impact archaeological resources than Alternatives A and B. Significant cultural remains may exist in the locations where new development is expected in the Northeast Waterfront subarea which could be disturbed if substantial excavation occurs.

Alternative A consists of relatively moderate amounts of new development, with an emphasis on the re-use of existing buildings. As no excavation is generally involved in the adaptive re-use of existing structures, little to no potential impact on archaeological resources would be expected from this activity. Additional new development and intensification of uses expected under Alternative A in all of the subareas would have a greater potential to impact archaeological resources than the very limited building activity expected under the No Project Alternative, depending on the extent of excavation involved. If substantial excavation occurs within the various Opportunity Areas expected under Alternative A, then archaeological impacts could occur, particularly at locations from Channel Street/China Basin northward.

Alternative B assumes more intensive, larger-scale and widespread new development than either Alternative A or the No Project Alternative. While specific plans are not now known, it is reasonable to assume that such large-scale development would likely involve much more excavation than generally envisioned in the modest developments of Alternative A. Because of this, Alternative B would have the highest potential amongst the Alternatives to impact buried cultural resources, again, particularly in the areas north of Channel Street/China Basin which are richer in these resources.

Because buried cultural materials are hidden, information on their location and extent is inherently incomplete, and the possibility of material existing in any particular location cannot be eliminated. Unexpected significant archaeological finds, such as buried ship hulks, have been discovered in the Project Area and surroundings in the past which could not have been anticipated from archival information. It is reasonable to assume the potential for similar finds exists to varying degrees within the Project Area. Any future construction under any of the Plan Alternatives which involves substantial excavation or other soil-disturbing activities has the potential, though perhaps very slight in some areas, to disturb or destroy buried archaeological resources which may be significant.

While there are no policies in the draft WLUP which directly address archaeological resources, there are some general policies regarding the preservation of significant historic resources and recognition of the historic context of the Port. Plan goals include the "development of urban design guidelines which will include identification of significant historic resources that should be preserved," under the heading of "An Evolving Waterfront, Mindful of Its Past and Future" (pp. II-5,6,7), and the general development standards for the Fisherman's Wharf Mixed Use Opportunity Area include encouraging a museum of fishing industry, maritime or Wharf history (p. IV-11), which could be enhanced by the public display of archaeological materials. The general goals of the identification and preservation of significant historical resources would appear to generally apply to archaeological resources; however, this goal could be in conflict with other goals encouraging new development on Port properties.

The extent to which individual projects might affect archaeological resources through disturbance, or some mitigation be achieved through their preservation or incorporation into public historical exhibits, can only be determined in a subsequent detailed analysis specific to that project. The mitigation measures proposed in this EIR (Section VI.O, p. 669) outline a program for these project-specific reviews which would minimize potential adverse impacts on these resources.

The mitigation measures are directed, first of all, at identifying, avoiding and preserving archaeological resources in the selection of development sites and the design of individual projects. Specific proposals would be subject to a brief initial screening by an archaeologist to determine the sensitivity of the property. In many Project Area locations, particularly south of China Basin, documented fill history and prior soil disturbance could demonstrate that the location has virtually no potential for significant archaeological resources, therefore no possible impacts, and no further follow-up would be needed. In locations that are found in the initial screening to have archaeological potential, a more detailed assessment would be prepared, which could lead to a program of pre-construction testing, excavation monitoring, or both, depending on the archaeologist's findings in consultation with the Environmental Review Officer. The pursuit of less sensitive alternative sites or project designs which avoid identified cultural resources is encouraged in the early project planning stages. If pre-construction testing is warranted, coordination with other sampling, for example, for geologic and hazardous contamination studies, is encouraged.

The mitigation measures also provide for, where warranted, on-site monitoring of excavations by a qualified archaeologist, allowing for the temporary stoppage of work in order to evaluate and protect cultural remains that are unavoidably uncovered or disturbed. All archaeological work conducted in the evaluation of sites, sampling programs, excavation monitoring or resource recovery would be documented in reports submitted to and maintained by the Office of

Environmental Review and the Historical Resource Information System's Northwest Information Center archives, per the mitigation measure. This program establishes a tiered system of project-specific follow-up assessment, review and monitoring, based on the sensitivity of the site and potential impacts of a specific proposed development.

D. TRANSPORTATION

MEASURES PROPOSED AS PART OF THE PROJECT

None.

MEASURES IDENTIFIED IN THIS REPORT

D-1. Under Alternative A for the weekday P.M. peak hour, the intersection of The Embarcadero and Bay Street would be at LOS E, an unacceptable service level. A right turn arrow for the Bay Street approach to the intersection would improve this condition to LOS D, an acceptable level of service.

D-2. Under Alternative B for the weekday P.M. peak hour and during the Saturday midday peak hour, the intersection of The Embarcadero and Bay Street would operate at LOS F, an unacceptable service level. A right turn arrow for the Bay Street approach to the intersection eastbound would improve weekday P.M. peak hour delay time by about 40 seconds; however, the LOS would remain at F. With the right turn arrow, the Saturday midday peak hour service level would improve from LOS F to D, an acceptable service level.

D-3. Also under Alternative B for the weekday P.M. peak hour, the intersection of The Embarcadero and North Point would operate at LOS E. Providing a right turn pocket, by removing two to three parking spaces and removing the red zone along the southern edge of North Point Street approaching the intersection (assuming this bus stop will not be needed in the future with the F-line operation), would improve this intersection to LOS D.

D-4. The Port should develop and institute a monitoring program designed to regularly evaluate levels of service and performance of intersections within the Project Area, to assure that they do not deteriorate to unacceptable levels. The monitoring program should include such elements as:

A. Requiring individual project proponents to perform intersection level of service analysis for existing and future conditions, at intersections which may reasonably be expected to be affected by that development, and requiring identification and implementation of appropriate mitigation measures;

B. Not approving development of specific project proposals which would degrade intersection levels of service, until such time as appropriate measures can be implemented to assure performance at an acceptable service level.

Any transportation monitoring program would need to be coordinated with monitoring of the Congestion Management Program network, conducted biennially by the San Francisco County Transportation Authority as the designated Congestion Management Agency for San Francisco County. Within the Project Area, The Embarcadero, King Boulevard, Third and Fourth Streets are all included on the Congestion Management Program network. A number of intersecting streets (North Point, Bay, Broadway, Washington, Clay, Cesar Chavez, and Evans west of Third) are also included on the CMP network. The Authority would conduct monitoring activities along these facilities, but only in the context of determining changes in Level of Service for arterial segments (not for individual intersections). Degradation of the Level of Service for one or more individual intersections within an arterial segment, to Level of Service "F" or to below some other designation deemed to be acceptable, could also degrade the segment Level of Service. The degree of impact to the segment may not be sufficient for the Transportation Authority to identify a "deficiency" under the CMP process (Level of Service "F" for the entire segment), even though the Port could impose mitigation requirements for developers of projects that would have a significant impact on individual intersections. Although unlikely based on the transportation analysis for this EIR, cumulative development along the Waterfront might cause degradation of a particular segment of the CMP network to fall to "F," thereby triggering a finding of deficiency requiring formulation of a Deficiency Plan, and implementation of that Plan under the CMP processes identified by the Transportation Authority. The Authority could, in this circumstance, identify the Port as the lead agency for development of the Deficiency Plan and for implementation of any corrective measures.

-5. To reduce vehicular traffic, and to accommodate demand for transit along The Embarcadero generated by Alternative B, additional transit capacity along The Embarcadero (with direct connection between Fisherman's Wharf and the South Beach/China Basin subareas) would be needed, particularly on weekends. Ideally, additional Muni service (e.g., additional F-Line streetcars, continual service along the full length of The Embarcadero [formerly proposed as the E-Line], F-Line supplemented by reinstating 32-Embarcadero bus service, or some combination of these) should be provided. If conditions warrant such additional transit capacity, the Port and/or its tenants should provide financial assistance to Muni for both capital and operating costs. If augmentation of Muni service is determined to be infeasible, and/or the degree of augmented Muni service is not sufficient to meet demand, the Port and/or its tenants could institute private transit shuttle services along The Embarcadero with stops located to increase accessibility to and the attractiveness of regional transit (e.g. BART, Caltrain, SamTrans and ferries).

-6. Under Alternative B significant numbers of short transit trips along The Embarcadero north of the Ferry Building are forecast, which would primarily have an impact on the Muni F-Line, particularly on weekends. Alternative B would also generate new demand for Muni service that could cause significant congestion on individual lines Citywide. Muni may not have sufficient operating funds to provide additional seating capacity over that currently projected. Several options are available to help mitigate this impact.

A. The Transit Impact Development Fee Ordinance currently is applicable only to net new office development within a specific geographic area. The Ordinance could be amended to specifically apply to development within the Project Area, although the amount of net new office growth in the Project Area would not be large and thus would provide limited additional revenue to Muni to help support additional transit service on The Embarcadero. The TIDF could also be amended to be more inclusive in terms of the land uses that would trigger imposition of the fee on a developer, while continuing to be related primarily to special (extraordinary) demand for peak period service.

B. A new funding mechanism for Muni could be enacted, such as a Special Transit Assessment District. Various proposals for alternative funding mechanisms have been put forward in the past. The Port should actively support future proposals which are designed to provide additional operating and capital resources to Muni, including any future local proposals for a special district, tax or fee that would support Muni services, and any future proposals before the State and federal legislatures which would provide additional financial resources to Muni for both operations and capital projects. The Port could also be an advocate for specific transit capital projects that would enhance Muni service to the Project Area.

C. The San Francisco half-cent sales tax for transportation expires in the year 2009. The Transportation Expenditure Plan establishes a prioritized list of specific projects for use of these funds. It is possible, if not likely, that the San Francisco County Transportation Authority, which administers the sales tax funds, may seek reauthorization of the sales tax prior to its expiration. A new Transportation Expenditure Plan would need to be prepared to support such reauthorization. The Port should actively support identification of specific transit improvements along the waterfront which could help mitigate unmet transit demand identified in this EIR as a component of this Expenditure Plan.

D. The Port and/or its tenants could directly provide funds to Muni for additional waterfront transit service. Such direct payment to Muni might be partially financed from additional revenues to the Port resulting from Waterfront Land Use Plan (WLUP) development.

D-7. To help induce shifts from vehicles to transit and thereby partially mitigate local intersection impacts and regional highway impacts, the Port could require and/or institute Transportation Demand Management Programs among developers of major trip generators (or all developers).

Such programs typically target primarily commute trips, with various educational, assistance and incentives measures to encourage carpooling and vanpooling, and transit use. These measures may be accompanied by such "disincentives" to low-occupant private vehicle use as restricting the amounts and/or location of parking made available to employees, and charging higher fees for all-day parking. Also typical are measures designed to shift time of commute travel to the "shoulders" of the peak, and/or to encourage less trip making through alternative work schedules and telecommuting. The effectiveness of these programs is variable, but they are most appropriate and effective when there are substantial constraints to vehicular travel, circulation and storage coupled with suitable options such as excellent transit accessibility. San Francisco in general, and its downtown and portions of the waterfront in particular, exhibit this combination of factors.

The Port could also design and implement similar programs which would target non-commute travel. An example of the type of measure which might be included is the issuance of discount admission to some uses, or reductions in the price of services and/or merchandise, upon presentation of a valid transit transfer or other proof of transit use payment. The Academy of Sciences in Golden Gate Park has instituted such a program, and the Pier 39 aquarium (Underwater World) also has a requirement to conduct such a program. Additionally, a free shuttle along The Embarcadero could be a part of this type of program, and would help to alleviate local auto congestion.

The ability of the Port to mandate some types of Transportation Demand Management programs may be limited by the recent enactment by the State of California of SB437. This legislation prohibits any public entity from requiring employer-based trip reduction programs. The types of programs and measures described above are included in the definition of employer-based trip reduction. Under the legislation, voluntary efforts on the part of individual employers is allowed. The legislation may be interpreted such that negotiated Development Agreements, or other types of agreements negotiated between a project sponsor and a regulatory or permitting agency, including a commitment to implement such programs, constitutes a voluntary action on the part of the employer/project sponsor.

IMPROVEMENT MEASURES IDENTIFIED IN THIS REPORT

The following measures could improve transportation conditions that may be of concern, but would not necessarily address specific significant impacts created by the project.

1. The following steps could be taken to promote bicycling and walking as alternative travel modes and to improve pedestrian and bicycle circulation:

   A. Remove unnecessary obstructions from sidewalks which impede pedestrian flows and queues.

   B. Install pedestrian signs and barriers to direct pedestrians to protected crossings.

   C. Provide adequate crosswalks at every opportunity to safely facilitate and accommodate the projected number of pedestrians.

   D. Implement pedestrian signal timing considering the traffic signal coordination along The Embarcadero to minimize delays to both motorists and pedestrians.

   E. Implement the recommendations of the San Francisco Bicycle Plan regarding the bike route network for the City. The Project Area in particular would be served by the recommended routes on The Embarcadero, Third Street, Market Street, Broadway, North Point Street, Howard Street, Folsom Street, Townsend Street, 16th Street, Mariposa Street, Army Street, Indiana Street, and Evans/Innes Avenue.

   F. Provide safe, secure and convenient bicycle facilities.

G. Require bicycle facilities in conjunction with large-scale projects.

2. Truck routes to and through the cargo shipping area in the Southern Waterfront and South Beach/China Basin subareas should be clearly signed and enforced to prevent potential impacts on surrounding local streets.

   The Port could help to provide funds to the Department of Parking and Traffic for better and more appropriate and visible signage throughout the Project Area, and should problems continue to exist, provide funds to appropriate agencies to increase enforcement of truck routes and truck restrictions.

3. Construction of a light rail line from the downtown along Third Street into the South Bayshore neighborhood could provide additional capacity at the Southeast San Francisco screenline to accommodate projected demand. The Transportation Expenditure Plan for the San Francisco half-cent transportation sales tax includes funds for construction of light rail lines in the South Bayshore Corridor. Muni is currently beginning a federal Major Metropolitan Transportation Investment Study (MIS) process for this corridor. An EIS/EIR will identify the locally preferred Bayshore Corridor Alternative. The South Bayshore and Geary corridors compete for federal, regional, State and local funds. Construction of a light rail line from the downtown along Third Street into the South Bayshore area was not assumed in the WLUP analysis because, although funds are identified locally and in the MTC Regional Transportation Plan, Muni has not yet made a decision regarding the exact scope and timing of light rail transit improvements in San Francisco. If constructed it would increase transit capacity to the southeast part of the City, directly serving the South Beach/China Basin and Southern Waterfront subareas of the Project Area (but indirectly serving the entire area) and thereby help to reduce overcrowding on Muni and, if shifts from auto to transit occur as a result of the increased capacity and service, help to reduce traffic to and from the Project Area to the southeast section of the City. The Port could help advocate this project.

E. NOISE

IMPROVEMENT MEASURES PROPOSED AS PART OF THE PROJECT

The following are policies or development standards in the draft WLUP.

> "Protect the environment and ensure compatibility with adjacent uses when authorizing interim uses by:
>
> > "Reviewing the list of principal permitted uses in a C-2 District and placing additional limitations on those uses located within 100 feet of any residential district which would generate excessive noise, dust or glare." (*General Land Use Policies for Interim Uses, Areas North of China Basin Channel and Within BCDC's 100 Foot Shoreline Band, and Seawall Lots North of China Basin Channel*)

- Select and design activities to minimize traffic noise impacts from the Bay Bridge. (*Development Standards, Rincon Pier Mixed Use Opportunity Area*)

IMPROVEMENT MEASURES IDENTIFIED IN THIS REPORT

No significant noise impacts have been identified. The following measures could reduce noise that may be of concern.

1. To reduce construction noise impacts, the Port should require construction contractors to limit noisy construction activities to the least noise-sensitive times of day and week if feasible (e.g., 7:00 a.m. to 6:00 p.m., Monday through Friday).
2. Prior to noisy construction activity (i.e., pile driving), contractors should notify and meet with neighboring residents and business occupants to inform them of dates, hours, and duration of such activities so that these parties might plan their activities accordingly.
3. Procedures with the highest noise potential should be scheduled for the times when the ambient noise levels are highest when feasible (i.e., during peak commute hours).
4. For work in areas containing noise-sensitive uses, contractors should be required to employ the quietest among alternative construction equipment or to muffle/control noise from available equipment.
5. The Port should require developers of all new residences and hotels in the Project Area to perform project-specific noise analysis, to ensure that adequate noise reduction and insulation features are in the building designs as required by the San Francisco Master Plan.
6. Development of breakbulk cargo facilities at Piers 48 and 50 could include incorporation into facility design noise barriers (berms and/or sound walls) to reduce potential noise impacts at planned open space and residences in the Mission Bay project area. Noise barrier mitigation at Piers 94 and 96 would likely result in secondary visual impacts (view blockage from Pier 98 wetlands due to the height of barriers that would be required) and is therefore not recommended. Generally, berms and/or sound walls could reduce noise but may not be feasible for the types open space envisioned within or near the Project Area (e.g., wetlands, public parks). It would generally not be feasible to place noise barriers around open spaces themselves without substantially reducing their visual, recreational, and/or habitat value.

F. AIR QUALITY

MEASURES IDENTIFIED IN THIS REPORT

F-1. Construction contractors could be required by the Port to implement a dust abatement program to reduce the contribution of project construction to local PM_{10} concentrations. Elements of this program should include the following:

- Water internal roadways on unpaved lots under construction just prior to the morning and evening peak traffic periods (to limit the potential for major roadway traffic to entrain dust), limit speeds to 10 mph, and sweep paved internal roads after the evening peak period.

- In addition, water active sites (e.g., where major earthwork is underway) as appropriate. Increase the frequency of watering when wind speeds exceed 15 miles per hour. Suspend all excavating and grading operation when instantaneous gusts exceed 25 miles per hour.

- Replace ground cover in disturbed areas as quickly as possible.

- Enclose, cover, water twice daily, or apply soil binders to exposed stockpiles of sand, gravel, and dirt.

- Sweep adjacent City streets at the end of day if any visible soil material is carried over to adjacent thoroughfares.

- Cover all trucks hauling dirt, sand, soil, or other loose materials. Maintain at least six inches of freeboard between the top of the load and the top of the trailer.

- Sweep up dirt or debris spilled onto paved surfaces immediately to reduce resuspension of particulate matter through vehicle movement over these surfaces.

- Designate a person or persons to oversee the implementation of a comprehensive dust control program and to increase watering, as necessary.

- Maintain and operate construction equipment so as to minimize particulates from exhaust emissions. During construction, require contractors to operate trucks and equipment only when necessary. Equipment should be kept in good condition and well-tuned, to minimize exhaust emissions.

F-2. Measures to reduce vehicle trips would also help to improve air quality. See Section VI.D., Mitigation Measures, Transportation, p. 644. However, it is unlikely that these measures would result in trip reductions that would reduce emissions of criteria air pollutants such that no criteria air pollutants would exceed the Bay Area Air Quality Management District significance thresholds.

F-3. Federal and State authorities (the U.S. Environmental Protection Agency and California Air Resources Board, respectively) are considering establishment of emissions standards for new marine engines that could ultimately limit or reduce emissions from marine vessels. However, there are no feasible mitigation measures for marine vessel emissions that are within the jurisdiction of local or regional agencies such as the Port or the Bay Conservation and Development Commission.

G. VISUAL QUALITY AND URBAN DESIGN

MEASURES PROPOSED AS PART OF THE PROJECT

Given the program level of analysis in this EIR, there is insufficient information to conclude whether development under the WLUP would generate significant adverse effects on visual quality and urban design. In the absence of knowledge about potential future projects that may be proposed, the possibility of significant adverse impacts cannot be ruled out. This issue is currently being addressed by the Port in the development of Urban Design Guidelines (including historic preservation policies), as called for in the WLUP. The urban design guidelines should be developed to avoid the creation of significant urban design impacts in future projects as detailed below.

In addition, the Draft WLUP identifies as a key implementation goal a streamlined and simplified design review process for development projects which would seek early, integrated review by the applicable agencies which have design review jurisdiction over the affected development site, rather than the current process of sequential, separate reviews by each ndividual agency. To address this goal, the Port proposes amendments that would establish a waterfront design review process to review the architectural and urban design of certain types of new development. As stated within the WLUP, "improvements on the waterfront, consistent with the Plan, [would] be realized through a site-specific development process" (WLUP, Chapter 5). t is intended that the process would involve representatives of the Planning Department, Port, and BCDC (as applicable), each of which would review projects to ensure conformance with heir respective policy plans and urban design and public access requirements. However, details regarding participation, notice requirements for public hearings and other procedures have not et been identified.

MEASURES IDENTIFIED IN THIS REPORT

G-1. The Port should add policy language or development standards that would require retention, replacement, and/or expansion of visual access to resources of high visual quality.

For incorporation into its Design Guidelines, the Port, assisted by a qualified professional, should define important visual and urban design qualities of the subareas, and the urban design/architectural resources on specific seawall lots and piers, that are significant and why.

Because the WLUP, if adopted, would have the potential to cause or allow substantial alteration or obstruction of views to visually prominent (man-made or natural) resources, the Design Guidelines should include policies for their protection and enhancement. The Design Guidelines should adopt criteria that are specific to the development of seawall lots, pierhead and bulkhead buildings, and piersheds. The criteria should specify that future development would not dominate existing urban design resources within subareas.

The Port also should require specific findings to be made by the Port and Planning Commission in approving proposed projects with respect to the Planning Commission's conditional use permitting criteria (Planning Code Section 240.1) that are currently proposed for elimination under the WLUP. In brief, these visual quality-related criteria require the consideration of provision of maximum feasible public access, and provision or maintenance of view corridors along streets into the Bay, and panoramic views, in accordance with the Master Plan.

G-2. The Port should consider visual quality objectives early in the development of proposed projects, evaluate projects against the standards developed above, and ensure that project approvals are consistent with the adopted standards.

Because development projects that thoughtfully consider visually prominent resources early in their planning process would be less likely to result in obstruction of resources, the Port should develop and adopt a policy or regulation that encourages and supports such early consideration and that requires projects to be consistent with the urban design guidelines described above. The policy could be adopted separately or could be incorporated into the WLUP.

> For example, the implementation recommendation (3) on page V-14 of the Draft WLUP could be revised as follows and adopted as policy by the Port Commission concurrent with adoption of the Waterfront Land Use Plan: "Urban design policies and design guidelines, *including standards that identify and discuss the preservation of visual resources,* ~~should~~ *shall* be considered in identifying development concepts, and ~~should~~ *shall* be reflected in the specifications included in ~~the~~ request*s* for proposal. *All approval actions by the Port Commission shall be consistent with these urban design policies, design guidelines, and visual resource preservation standards.*" (Additions are shown in italics, deletions are crossed-out.)

G-3. The Port should add policy language or development standards that would prevent adverse effects related to shadow and wind impacts on designated public access areas and vantage points within subareas.

The Design Guidelines should consider shadow and wind impacts on urban design resources and the visual quality experiences within areas of public access. Design policies should discourage excessive winds and shadows that would be cast on areas of public access and public vantage points with views of visually prominent resources. The Port should also incorporate standards in Section 148, Reduction of Ground Level Wind Currents in C-3 Districts.

H. BIOLOGICAL RESOURCES

MEASURES PROPOSED AS PART OF THE PROJECT

The following are policies or development standards in the draft WLUP.

1. "Permit the operation of excursion boats, water taxis and other vessels at Pier 46B to complement recreational boating activities in South Beach Harbor provided that, if the Mission Bay Wetlands is developed on the south side of China Basin Channel, these new maritime uses comply with all applicable environmental regulations to avoid any significant detrimental water quality impacts on the wetlands." *(Development standard, China Basin Mixed Use Opportunity Area)*

2. "Seek mitigation areas to compensate for fill of the wetlands at Pier 94 in advance of long-term maritime expansion on the site, and as soon as possible." *(Development standard, Pier 94)*

3. "If a cogeneration power plant is proposed in the Cargo Way Opportunity Area the project should include:

   > ". . .State-of-the-art environmental protections which mitigate emissions and other impacts on resident populations, wildlife habitats or other sensitive receptors in the South Bayshore area; . . . "*(Development standard, Western Pacific and Cargo Way Mixed Use Opportunity Areas)*

MEASURES IDENTIFIED IN THIS REPORT

H-1. The Port could limit dredging operations and pier repair/replacement to between March 1 and November 30 to eliminate any potentially significant impacts of dredging or pier repair/replacement on the Pacific herring fishery.

H-2. Prior to demolition or renovation of any abandoned building, surveys should be conducted between August 15 and October 15, or between February 1 and May 1, by a qualified bat biologist. If no Townsend's western big-eared bats are found during the survey, no additional mitigation is required.

If Townsend's western big-eared bat, a California Species of Special Concern, is found during an August - October survey, appropriate exclusion devices approved by CDFG & USFWS should be installed by a qualified bat biologist. Once the bats have been excluded, demolition may occur. If demolition is delayed beyond the effective period of the survey, new surveys will need to be conducted prior to demolition unless areas used by the bats to gain entrance into the buildings are blocked by a qualified bat biologist.

If Townsend's western big-eared bats are found during a February - May survey, demolition should not take place until the end of the nursery season in August. Exclusion devices should be placed by a qualified bat biologist in accordance with CDFG and USFWS.

IMPROVEMENT MEASURES IDENTIFIED IN THIS REPORT

The following measures, although not required to mitigate significant impacts, could reduce impacts on biological resources that may be of concern.

1. According to the USFWS, the Port should use suction, rather than clamshell methods for dredging whenever possible, because suction dredging causes significantly less turbidity. When carrying out suction dredging, the Port should clean the head close to the Bay bottom, because raising to the surface for cleaning can entrain fish.

2. Pier repair/replacement projects should be planned so as to leave old pilings in place whenever possible to avoid impacts to existing substrate. New pilings should be constructed of pre-stressed concrete or steel (that has not been treated with anti-biofouling material), rather than wooden pilings, which are generally chemically treated with materials that could impact biologic resources. This measure would, over time, result in additional increases in fill in the Bay, but is recommended by the Corps of Engineers.

3. The Port could ensure that partial removal of piers or floating docks and (permanent) docking of historic ships in the Fisherman's Wharf subarea leaves sufficient floating dock space for the resident sea lions and does not significantly alter the flow of animal movement through this area. Prior to pier or floating dock removal (for at least one year) the Port should schedule periodic observations (by a qualified biologist) of the sea lions using the Pier 39 area to determine how much space would be required to ensure that these animals are not significantly impacted.

4. The Port or specific project sponsor could design public access near wetlands to prevent intrusion into the wetlands. To maximize opportunity for education and observation of the wetland(s), the Port could provide education displays at the edge of the wetland. An observation tower could also be provided to allow an overview of the wetland and for observing bird life. Specific measures that could be taken to reduce intrusion into the wetland include: constructing a fence at the edge of the wetland high enough to prevent people from easily jumping or stepping over it, and planting upland vegetation along the wetland/access interface dense enough to discourage through traffic.

5. Improvement Measure 1 under Section VI. J., Hydrology and Water Quality, which would require that stormwater runoff is treated prior to discharge and that there is no direct discharge to the Bay or surface waters, would also mitigate biological impacts related to stormwater runoff.

6. To minimize the potential for impacts to the Pier 98 wetland (Southern Waterfront subarea) and the planned Catellus wetland (South Beach/China Basin) from contaminated runoff from adjacent sites and/or uncontrolled human encroachment, the facilities adjacent to the wetlands could establish best management practices (BMPs). The BMPs should include stormwater prevention and control plans and controls on positioning loading vessels so as not to alter (either directly or by wake displacement) wetland areas.

I. GEOLOGY, SOILS AND SEISMICITY

MEASURES PROPOSED AS PART OF THE PROJECT

None.

MEASURES IDENTIFIED IN THIS REPORT

I-1. A geotechnical investigation should be conducted under the direction of a Geotechnical Engineer prior to permitting any new construction or reuse of an existing structure for new uses that could increase the load of the structure. The investigation should be performed to evaluate subsurface conditions and existing foundation conditions at the site. The geotechnical investigation should evaluate the potential hazards such as settlement, ground shaking, ground rupture, liquefaction, subsidence, slope stability, and lateral spreading. Recommendations should be made regarding the design of new foundations, upgrading of existing foundations, seismic design, and mitigation of geologic hazards.

I-2. All open sub-grade structures and pits, whether temporary or permanent, should be provided with protection against damage resulting from adjustment to buoyant and lateral deforming soils.

All construction and design of such projects should provide specific measures to prevent hazards to people and damage to proposed or nearby structures that could result from these adjustments. In some cases, a specific geotechnical investigation may be required for permanent open sub-grade structures and open underground structures.

I-3a. Prior to any construction that would require dewatering, the applicant should submit and the Port should review a dewatering and excavation plan and an analysis of potential impact to adjacent properties to determine whether the potential exists to damage off-site property.

As a standard practice, the Port should require an application package that will indicate the amount of dewatering and the period over which dewatering may be required. The package should include a survey of adjacent structures with information concerning their age, foundation type, construction type, status as a historic landmark or structure of special significance, and record of any existing damage. The package should also identify adjacent City streets and the location of buried infrastructure. In addition, the application should indicate any specific mitigation measures incorporated into the project to minimize hazards to structures.

I-3b. To minimize dewatering hazards, construction projects should provide shoring of all excavation pit walls, and provide supports to adjacent structures, including foundation support if needed.

I-3c. All applicants for construction projects involving dewatering (as well as vibration-inducing pile driving) should post a surety bond to cover the costs of potential damage to off-site property from construction. (The bond is included in this EIR as a mitigation measure because of the uncertainty that other mitigation measures would protect off-site property from damage. If needed, the bond would be used to repair off-site damage and thus mitigate that impact.) The amount of the bond would be determined by the Port.

I-3d. Prior to any construction that would require dewatering or pile driving, the Port should notify all property owners within 200 feet of the proposed construction activity at least three months prior to the date of initiating demolition or excavation, whichever is the first activity to occur. The Port should provide an opportunity for all property owners to comment on the construction activity and allow them the opportunity to have their property photo-documented for its pre-construction condition. The Port is responsible for inspection of construction activities and should note any observations of proven or suspected subsidence damage on the site and at adjacent sites. This measure would allow adjacent property owners to document the condition of their property prior to initiation of an activity that could result in damage. If damage does occur, the measure would help to identify the extent of the damage caused by construction within the Project Area.

I-4. For impacts from pile driving, the Port and project sponsors should implement Measures I-3a through I-3d.

I-5. Proposed new dredging activities (deeper or in different locations than ongoing maintenance dredging) should be reviewed by an engineering geologist to assess potential hazards to Port facilities. Dredging programs in areas with a past history or high potential for lateral movement of Bay Mud should be designed to hold a slope without readjustment or slippage. (This measure would apply to suction and clamshell dredging.)

To minimize slope failure in the Bay sediments, dredged cuts should be properly designed and dredged, as recommended by the engineering geologist. Typically, subestuarine slopes in soft Bay sediments are cut at 3:1 to 6:1 (horizontal to vertical ratio).[1]

I-6. If demolition is not immediately followed by redevelopment, the Port should carry out effective measures that leave the site of all demolished buildings in a condition that will not pose a life safety hazard or potential to damage adjacent properties.

Such measures should include removal and or proper sealing of pipes (including water, gas, and sewer lines), establishment of effective shoring or construction of retaining walls for unstable pit walls, filling of basements that create hazardous conditions, removal of hazardous substances, and other measures as deemed appropriate at a specific site, such as fencing. The Port would be responsible for vacant lands that may include the hazards identified in Section V.I., Geology, Soils and Seismicity, (Hazards from Demolition), pp. 567-568. The above measures are minimum requirements to ensure that hazards would be held at acceptable levels until such time as land development could occur. The Port would be responsible for carrying out the mitigation or overseeing compliance with it.

I-7a. New high-occupancy mid-rise structures (i.e., on the order of 6 to 15 stories) in the Project Area should be designed with the aid of a dynamic method analysis. The Port should consider establishing specific building design criteria developed by a task force of structural engineers to determine which types of structures (considering framing system, foundation, height and massing) should be designed using a dynamic method analysis and adopt this requirement as a Waterfront Land Use Plan policy.

The severe ground shaking hazards of Port lands indicate that large structures (including high-occupancy mid-rise structures) should be designed to meet seismic resistance standards greater than the minimum standards in the UBC. The UBC does not require this except for certain buildings (none of which are specifically identified in the Waterfront Land Use Plan, although the Ferry Terminal is being designed as an "essential structure," to more stringent earthquake force design requirements. Fire and police stations, hospitals and schools also would be essential structures). Currently, the best available method for achieving this end is the use of a dynamic method analysis for the design of the buildings. This method incorporates a consideration of the response of the site soils to earthquakes generated in the region. For each building, the site response spectra are modeled and incorporated into the structural design. As noted in the Setting (Section IV.I., Geology, Soils and Seismicity, p. 262), the entire Project Area should be considered part of a "special studies zone" in which the severe earthquake hazards of ground shaking and secondary effects are evaluated and incorporated into structural designs. Use of a dynamic method analysis substantially enhances the chances that the new building would be more resistant to collapse and damage from a major earthquake than if it meets only the minimum UBC requirements. The higher costs associated with using the method and applying it in design and construction likely are significantly less than those that would result from a building being red-tagged or required to undergo substantial repair following a major earthquake.

I-7b. To minimize hazards to building occupants from non-structural damage, the Port should require all Port facilities and tenants to carry out the following measures at a minimum: heavy objects should be attached to secure walls and floors, and light, loose objects should be placed to minimize their potential to move or overturn; large storage containers should not be loosely stacked, and those stored on shelves should have appropriate restraints or other means to prevent them from tipping or sliding off the shelves.

Heavy objects like freezers, boilers, chillers, laboratory equipment, battery racks and electrical transformers, heavy storage cabinets, tanks, safes, oversize file cabinets, etc., should be firmly secured to floors and walls to prevent their falling or sliding. All equipment using natural gas should be anchored. Care should be taken to avoid placement of such objects where they could topple or move and block exit doors.

I-7c. Because of the large number of employees and visitors in some facilities potentially on-site in an earthquake and the likelihood that the facilities will be needed to supply emergency response services, high-occupancy facilities should be required to store emergency response supplies and equipment on-site for a 72-hour reserve.

It is likely that emergency response systems in San Francisco and in the Bay Area as a whole would be overloaded in the immediate aftermath of a large earthquake. Because of the large population that may be present in the Project Area in an earthquake (especially under Alternatives A and B), it likely would be necessary for offices, hotels, industrial facilities and residents to be relatively self-sufficient for a period of a day or two until supply systems can be restored. Observations from large earthquakes, such as Mexico City in 1985 and Kobe in 1995, confirm that most supply services for water, power, food and medical supplies would be unavailable for a minimum of 72 hours after the earthquake. For this reason, medical supplies needed for common earthquake injuries, stretchers, blankets, flashlights and at least 72 hours' potable water and non-perishable food supply should be stored at easily accessible locations in offices, business complexes, hotels and large residential structures. Heavy crow-bars, other heavy tools, and hand-operated loudspeakers should be kept in easily accessible and well-marked locations in every building and in large parking structures.

I-7d. Non-structural interior elements (ceilings, partitions, light fixtures, HVAC, pipes, etc.) should be designed to withstand strong ground shaking and remain intact. This would be accomplished, for example, by selecting lightweight materials and firmly securing them to structural elements of the building and by using flexible connections for pipes.

I-7e. Require the use of flexible utility connections and fasten water heaters to walls. Require the installation of automatic shut-off valves in all natural gas pipelines and provide similar emergency shut-off valves for other gas (oxygen and nitrogen) systems. Do not install automatic shut-off valves for water supplies. Require the posting of room/building layout diagrams that indicate the location of shut-off valves for natural gas.

I-7f. Require fire extinguishers in all rooms and hallways and adjacent to all exit doors (including stairwell exits). Require that cabinets are not placed where they could overturn and block access to fire extinguishers. Require the training of all staff of offices, hotels, industrial facilities, restaurants and entertainment complexes in the use of fire extinguishers.

I-7g. The Port should prepare an earthquake preparedness plan and an earthquake response plan, either as separate plans or to tie in with the Emergency Plan currently being prepared by the Port.[2] The earthquake preparedness/response plans would cover all development within the Project Area.

The Port should assign responsibilities for plan implementation and train all employees in plan elements. The Port should undertake a program of earthquake preparedness and response planning for all its tenants; this may include requiring each tenant with over 100 employees or public use of 100 or more persons to prepare an earthquake preparedness plan and an earthquake response plan. Some of the key provisions of an earthquake preparedness plan include the following:

- Assign responsibilities for disaster control, including primary responsible individuals and back-ups.

- Ensure that individuals with assigned responsibilities are aware of their proper roles (e.g., medical response, fire response and coordination with the Fire Department, locating the whereabouts of all individuals within an assigned area/unit, conducting periodic inspections to reduce earthquake hazards within individual work areas, and maintaining a stock of necessary emergency response supplies and equipment).

- Train all employees in self-protective behavioral response during an earthquake. Train all employees in the use of fire extinguishers.

- Inform all employees about the location of emergency response equipment and supplies.

- Train all employees to report to an emergency supervisor at a designated safe location immediately after an earthquake.

- Provide free and accessible general first aid training. Training for injuries related to spills of hazardous substances during an earthquake is included in OSHA-required Contingency Plans.

- Conduct an earthquake drill at least once a year.

Some elements of an emergency response plan include the following:

- Assign all employees a predesignated place and individual to report to immediately after an earthquake.

- Establish a search and rescue plan within designated areas.

- Establish designated areas at or near the ground floor for short-term occupancy by employees or, alternatively, set up shelters in outside areas in a safe place.

- Provide battery-operated radios and televisions in these areas.

- Establish a chain-of-command and operations center for dealing with fires, spills, and damaged structures.

- Assign individuals to coordinate with the Fire Department if they arrive on-site to respond to a fire. The Fire Department may have additional requirements for emergency preparedness and response.

- Design response plans for an objective of near-regular medical service capability.

Implementation of Measures I-7a through I-7i would reduce the hazards of an earthquake to an acceptable level of risk, within the requirements of the City of San Francisco. Earthquake hazards could not be entirely eliminated, and both Alternative A and Alternative B would therefore result in significant effects related to earthquake hazards that could not be fully mitigated, by exposing increased numbers of persons to substantial danger in an earthquake.

I-8a. The Port should take feasible steps to minimize potential earthquake safety risks related to hazardous materials in its operations and that of its tenants.

Specific steps may include appropriate seismic safety provisions, such as prohibiting the storage of hazardous materials in containers above head level (about five feet); anchoring hazardous materials shelves and heavy equipment to walls and floors; constructing heavy doors that are designed to remain shut during earthquake vibrations; providing hand-operable closures for vents and air ducts; and other provisions as discussed in the Association of Bay Area Governments' *Hazardous Material Problems in Earthquakes: A Guide to Their Cause and Mitigation*. Other measures should be implemented as recommended by the San Francisco Fire Department and/or Health Department.

Additionally, The Port should prepare an Emergency Procedures Manual and periodically revise it to be consistent with changes in the facilities and operations.

I-8b. The Port should require tenants to design all facilities for storage of hazardous chemicals in containers, such as cabinets, shelves, and drawers, to minimize potential hazards in an earthquake. The Port should require tenants to report on compliance and should conduct inspections for compliance (or contract with the Fire Department and/or Health Department to carry out inspections).

Storage facilities should include safety lips to contain spills and to reduce the likelihood of contents falling. All shelves and cabinets should be secured to a wall or ceiling. All cabinets and drawers should be provided with positive latches that would not open during earthquake motions and vibrations. Compressed gas cylinders, including empty ones, should be secured to fixed features. Gas cylinders should be secured at two locations along their vertical axis, one in the top one-third of the cylinder and another in the bottom third of the cylinder.

The Port should require storage of hazardous chemicals in approved containers and separation of incompatible chemicals in separate storage areas. If chemical storage is vented by an electric fan, an alternative (emergency) means of ventilation should be provided, which may be a mechanical (non-powered) vent.

Implementation of Measures I-8a and I-8b would reduce hazardous materials-related non-structural safety hazards of an earthquake to an acceptable level of risk.

I-9a. Project sponsors, including the Port, should employ an engineer qualified in earthquake engineering to incorporate into the final design of individual facilities developed under the WLUP all economically feasible engineering methods to reduce the potential for loss of life-line services. This may include methods to improve unstable ground conditions, to strengthen infrastructure to be more resistant to earthquake induced ground movements, and to organize and prepare for earthquake response.

While specialized techniques for ground improvement to reduce liquefaction hazards likely are not practical or economically feasible over large areas, ground improvements within selected strategic sites may result in substantial hazard reduction to utility systems. In such areas a variety of ground stabilization techniques may be considered, such as compaction grouting, placement of stone columns, and deep soil mixing.

As recommended in the report to the Department of Public Works titled *Liquefaction Study, North Beach, Embarcadero Waterfront, South Beach, and Upper Mission Creek Area, San Francisco, California, January 1992*, the Port in conjunction with the San Francisco Public Works Department and Fire Department should consider planning pipeline system modifications such as enhancement of system redundancy with additional piping or provision of new pipe routes which avoid poor soil areas, strengthening of pipe and joints, and avoidance of contact with neighboring utilities. The recommendations of that report with regard to post-earthquake serviceability also should be considered including subdividing the Auxiliary Water Supply System (AWSS) into north/south halves, replacing corroded tie-rods on pipelines, increasing the size of the portable water supply system, adopting a standing order to start pumps at pump stations No. 1 and No. 2

following an earthquake, designating a San Francisco Fire Department water supply officer for earthquake response, arranging a volunteer marine crew to staff the second fire boat in the event of an earthquake, adding flexible joints at water main pile-supported sewer crossings; improving AWSS fire hydrant foundations and connections; developing an automated AWSS leak detection and isolation system; reviewing current infirm area boundaries, and hardening corridors for AWSS mains at fire boat manifolds by installing new pipes on piles.

Additional measures also recommended in that report for the Municipal Water Supply System include developing procedures to supply water to the University Mound Pressure District service area (which includes all of the Port lands north of Warm Water Cove) from adjacent pressure districts, routing a new University Mound feeder main around regions of high liquefaction potential, installing flexible joints at mains crossing over pile-supported sewers, providing a planned System Control and Data Acquisition (SCADA) system to monitor flows and detect leaks and breaks after an earthquake, and developing mutual aid agreements with other water districts. Recommended mitigation for the sewers include training sewer repair crews in emergency response to earthquakes, maintaining an inventory of or access to large capacity sewage pumps, maintaining an emergency supply of construction and sewer repair materials, requiring seismic resistant material and construction for all new installations, and replacing structurally weak sewers using improved materials and construction methods in areas subject to liquefaction as part of the long range, Citywide replacement program.

I-9b. For individual development projects, the use of flexible connections for utility lines may be needed (see Mitigation Measure 7.g). Back-up supplies of water, power generators, and battery-operated telecommunications equipment may need to be installed (or enlarged at the existing facilities). The engineer should recommend the appropriate approach (e.g., separate facilities and equipment or upgrading existing facilities) for all Project Area facilities.

I-9c. The Port, in cooperation with the City's Office of Emergency Services, Fire Department and Police Department, should plan routes of alternative emergency access to development sites. This measure should be carried out soon after adoption of the WLUP.

Available routing for emergency response vehicles needs to be quickly assessed following an earthquake and conveyed immediately to ambulance drivers, fire persons and police officers. Consistent with the City's *Civil Defense and Disaster Operation Plan*, information should be provided about routing to hospitals including consideration of streets blocked by debris, collapsed or unsafe bridges, and streets rendered impassable by road damage. To prepare for such possible loss of access, the City should consider developing alternative routing concepts to reach the hospitals and familiarize ambulance drivers, fire persons and police with the alternates.

-10a. An inspection schedule should be developed and followed for regular inspection and evaluation of the condition of the piers. In conjunction with the inspection schedule, a maintenance and repair schedule should be developed and implemented.

-10b. Piers that are in poor condition should be repaired or demolished and removed. If repaired, piles that are deteriorated should be replaced or the portion that is rotted or deteriorated should be cut off and replaced with a concrete steel sleeve. A structural engineer should be consulted regarding the repair of the piers.

I-11a. At the time of anticipated tsunami incursion, the San Francisco Police Department should close off the immediate waterfront area of Aquatic Park, Fisherman's Wharf and the Hyde Street Pier to the public; all marina operators should close off access to the docks for the public and boat owners; and ferry boat operators should prevent people from standing on water-level ferry loading docks everywhere in the Project Area.

This mitigation measure would help to reduce the potential for casualties to occur from tsunami by keeping people away from areas where injury could occur. Damage to facilities would not be mitigated.

I-11b. To reduce potential damage to facilities from tsunami, consider constructing larger and higher breakwaters at the Hyde Street Pier, Fisherman's Wharf and marinas. The infrequency of tsunami may not warrant the cost and environmental impact of breakwater reconstruction.

J. HYDROLOGY AND WATER QUALITY

IMPROVEMENT MEASURES PROPOSED AS PART OF THE PROJECT

None.

IMPROVEMENT MEASURES IDENTIFIED IN THIS REPORT

No significant hydrology or water quality impacts (beyond the unavoidable significant impacts related to regional dredge disposal) have been identified. The following measures could reduce hydrology or water quality impacts that may be of concern.

1. As part of construction requirements, drainage from new or re-developed long-term facilities located outside of the City's combined storm drain/sewer system should either be connected to the system or to on-site oil/water separators so that stormwater runoff is treated prior to discharge and that there is no direct discharge to the Bay or surface waters.

2. Interim industrial uses (tenant-operated) should be encouraged to participate in the group monitoring program to increase awareness of stormwater runoff control and to participate in the Port's Best Management Practices for stormwater runoff.

3. Interim uses with specific wastewater disposal needs should be located where appropriate sewer connections and laterals are available and meet current City building codes. No direct discharge of any kind of wastewater to the Bay from interim uses should be permitted.

4. Water quality monitoring should be conducted during construction of facilities on or adjacent to the Bay to minimize effects of construction activities on water quality. In order to minimize potential for spills, construction materials or debris to enter the Bay and affect water quality, site specific construction methods and precautions, such as limiting activities on days of strong winds, could be included in the contractor's construction specifications to minimize effects on water quality. Demolition of structures with lead-based paint should include physical precautions to ensure that paint dust and chips do not enter the Bay.

5. During earthmoving activities associated with construction, erosion control measures such as silt fences or sandbags should be used to minimize wind-borne or water-borne sedimentation to surface waters.

6. The Port should work with the City and other agencies, such as Golden Gate National Recreation Area, to obtain and assure funding for annual updating of the San Francisco Oil Spill Prevention and Response Plan.

L. ENERGY

IMPROVEMENT MEASURES PROPOSED AS PART OF THE PROJECT

None.

IMPROVEMENT MEASURES IDENTIFIED IN THIS REPORT

No significant energy impacts have been identified. The following measures could reduce energy consumption that may be of concern.

In addition to compliance with energy-related regulations (Title 24 Energy Conservation Standards and Title 20 Appliance efficiency Standards), energy consumption resulting from implementation of the Waterfront Land Use Plan could be further reduced by other means. The following measures would increase energy efficiency, beyond that required by law, in conformance with the objectives and policies of the Energy section of the Environmental Protection Element of the San Francisco General (Master) Plan. These measures could be implemented by the Port, through requiring sponsors of individual projects to incorporate the measures into project design.

1. Energy-intensive materials and construction methods could be replaced by less intensive ones, where feasible to reduce construction energy consumption while maintaining the same final building performance criteria. The Port could require that project sponsors analyze the "embodied energy" in proposed construction materials and alternative

materials and choose the least energy intensive materials that would accomplish the intended structural, technical and architectural requirements.

2. Operational energy consumption could be reduced by a variety of design measures. Many of these measures have been documented by the San Francisco Public Utilities Commission, Bureau of Energy Conservation for land use projects.[3] Possible energy-efficient design measures include:

   - District heating and cooling systems. A district heating and cooling system could reduce the energy consumed in thermal generation of thermal energy (for space, water, or process heat) through the use of a more efficient, centralized plant rather than individual heating units in each building.

   - Energy-efficient equipment and appliances. Use of energy-efficient heating and cooling equipment and electric appliances could reduce operational energy consumption. The use of natural gas-fired space and water heating equipment, and energy-efficient electric appliances should be encouraged.

   - Reduced lighting. Appropriate reductions in building lighting can conserve energy consumed by the lighting equipment itself, and additional air conditioning required to remove waste heat generated by the lights, while maintaining adequate light levels. Reduced-lighting strategies include targeting light levels to specific tasks (e.g., higher light levels in work areas and lower light levels in surrounding areas), use of more efficient lighting equipment, automatic lighting controls (to turn off unneeded lights), and daylighting (optimizing the use of natural sunlight in building design).

   - Natural cooling. Cooling loads could be reduced by taking advantage of San Francisco's year-round cool climate. Non-residential buildings could use outside-air economizers (which use cool outside air rather than energy consuming refrigeration equipment for air conditioning) and residential buildings could use windows for natural ventilation.

   - Passive solar space heating. Passive solar space-heating uses design measures, rather than mechanical means, to collect and store solar energy. Passive solar design would be most appropriate for residential buildings. Solar energy could be collected directly in the living space and stored in the building materials. Passive solar design measures include building orientation (south facing orientations are best), building use (locating the main living area on the south side of the building would maximize solar energy use), use of appropriate building materials to provide "thermal mass" to store thermal energy and moderate temperatures, optimizing glazing areas based on wall orientation, and use of suitable types and placement of landscaping.

   - Energy management and control systems. Computerized energy management and control systems can provide optimum control of energy consuming equipment. These systems are most appropriate for relatively large (greater than 100,000 square feet) non-residential buildings.

- Individual metering. Individual metering of electricity and natural gas use provides an incentive for tenants to use energy wisely. This would be an appropriate strategy for multi-family residential buildings. Individual metering (by tenant or by floor) or sub-metering (individual metering and billing by the building owner rather than the utility) could also be appropriate for multiple-tenant, non-residential buildings.

- Cogeneration. Cogeneration is the combined production of thermal energy and electricity. The thermal energy is typically used for on-site space, water, or process energy and the electricity is either used on-site or sold to a utility. Cogeneration is particularly well suited to buildings with large thermal loads, and could be appropriate for large residential buildings (200 or more units), large non-residential buildings (greater than 300,000 square feet), light industries with process heat requirements, and hotels.

- Landscaping and building orientation for wind. Wind can increase the energy consumption of buildings through infiltration and cooling of the building surface. Buildings could be oriented, if feasible, with their long axis parallel to the prevailing winds (generally from the west and northwest in San Francisco), with landscaping on the west and northwest sides. These measures would reduce energy loss through wind while still providing adequate solar access.

- Optimized glazing. Optimized glazing is the most energy-efficient combination of glass characteristics in a building. Factors that affect energy consumption include the amount (percentage) of glass, the daylight penetration, and the shading coefficient. Optimized glazing would be most appropriate for non-residential buildings.

3. Building system operation and maintenance plans could help to reduce operational energy consumption through more efficient use and maintenance of building systems. Such plans could include information on all energy-consuming building systems, building-specific guidance on the most efficient use of energy, and required maintenance. This measure would be most appropriate for all non-residential buildings and large residential buildings.

4. Recycling of materials and conservation of water would have energy benefits in addition to decreasing the consumption of other natural resources.

5. Load management strategies could be used to reduce the impact on electrical generating capacity. Energy loads could be reduced by "peak shaving" (the reduction of electrical demand during high utility use periods) and curtailable load programs (in which participants receive financial incentives for shedding specified loads several times during the year).

6. Transportation energy consumption would be reduced by measures which reduce vehicle miles traveled and encourage the use of mass transit. See Section VI.D, Mitigation Measures, Transportation, p. 644.

M. HAZARDS AND HAZARDOUS MATERIALS

IMPROVEMENT MEASURES PROPOSED AS PART OF THE PROJECT

None.

IMPROVEMENT MEASURE IDENTIFIED IN THIS REPORT

No significant impacts related to hazardous materials have been identified. The following measure could reduce hazardous materials impacts that may be of concern.

1. All structures expected to have building materials removed during renovation or demolition should be inspected for hazardous building materials by a qualified inspector. If any friable asbestos-containing materials are identified, legal and adequate abatement practices (described in Appendix H) should be implemented prior to demolition or renovation. Any PCB-containing equipment or lead-containing building materials also should be removed and properly disposed of, according to requirements outlined in Appendix H.

N. HISTORIC ARCHITECTURAL RESOURCES

Given the program level of analysis in this EIR, there is insufficient information to conclude whether development under the WLUP would generate significant adverse effects on historic architectural resources. In the absence of knowledge about potential future projects that may be proposed, the possibility of significant adverse impacts cannot be ruled out. Further, in the context of this plan-level analysis, it is impossible to conclude that substantial changes or demolition of potentially significant resources are not significant in the absence of a comprehensive evaluation of the resource's significance.

MEASURES PROPOSED AS PART OF THE PROJECT

None.

MEASURES IDENTIFIED IN THIS REPORT

N-1. The Port should add policy language or development standards that would encourage retention and preservation of designated significant historic architectural resources, and potentially significant resources found to be significant pursuant to Measure N-2. The Port should establish a program and/or regulations that require retention of significant resources.

Because the Draft Waterfront Land Use Plan, if adopted, would have the potential to cause or allow substantial alteration or demolition of significant historic architectural resources, and because "improvements on the waterfront, consistent with the Plan, [would] be realized through a site-specific development process" (WLUP, p. V-1), the Port Commission should adopt a policy (within the Plan or in addition to the Plan) which would prohibit the demolition or substantial alteration of historic architectural resources identified as significant. This prohibition, if unqualified, would eliminate potential significant effects associated with historic architectural resources.

A broad range of measures is available to assist preservation of historical architectural resources, including designation as City Landmarks, establishment of City Historic Districts, and listing on the National Register of Historic Places, as well as programs to provide financial incentives for preservation, such as tax incentive or Transfer of Development Rights programs.

N-2. The Port, assisted by a qualified professional, should further define which historic architectural resources are significant and why.

There are two groups of architectural resources on the waterfront that have been identified as potentially significant, and have not been designated as landmarks/historic districts or listed/determined eligible for listing on the National Register of Historic Places. (See Figures 45 and 46, pp. 332 and 334, or Appendix I for a list of potentially significant resources.) There may be other potentially significant resources in the Project Area that have not yet been surveyed. All structures in the Project Area should be evaluated to further define significant buildings/features and the qualities that contribute to the significance of groupings or individual resources. This evaluation would include preparation of historic resources survey forms for buildings for which none exist, and evaluation by a qualified professional using criteria of the National Register of Historic Places, where no such evaluation has been completed. For the San Francisco Yard area (Union Iron Works), where a preliminary evaluation concluded that 24 buildings appear eligible for the National Register as part of a district, the evaluation would describe district boundaries, the physical condition of identified buildings, and any qualities that might make some portions of the district (including some buildings) of greater significance than others.

This evaluation could be accomplished in whole or in part within the urban design guidelines proposed in the Draft Waterfront Land Use Plan, and/or could be accomplished in stages as specific development proposals were advanced for sites encompassing potentially significant resources or districts. Evaluations could result in applications for local landmark designation, or in requests for determinations of eligibility for the National Register of Historic Places by the State Historic Preservation Officer.

N-3. The Port should develop and adopt standards for changes to historic resources.

Historic preservation objectives can be achieved in the context of change and do not require "freezing" buildings and districts in time. For this reason, and because thoughtfully designed changes to significant historic resources would be less likely to have a significant effect on the environment than demolitions or insensitive alterations, the Port would develop and adopt preservation design standards regarding changes to historic resources. These standards could be incorporated into the Waterfront Land Use Plan, could be included in the urban design guidelines proposed by the Plan, or could be developed as a separate document.

The standards could outline the types of changes that would be acceptable for historic resources, and would include, but would not necessarily be limited to, the following:

- Retention of historic building fabric and significant architectural features.
- Retention of a building's general form and overall "integrity," not just a building's facade.
- General strategies for reusing pier shed and pier bulkhead buildings and integrating new uses and development into and around those resources.
- Use of the State Historical Building Code where applicable.

The standards could also include a requirement for documentation of resources proposed for demolition, with a copy of that documentation to be provided to the Port Archives, the San Francisco Public Library, and the Landmarks Preservation Advisory Board.

N-4. The Port should consider historic preservation objectives early in the development of proposed projects, evaluate projects against standards developed above, and ensure that project approvals are consistent with adopted standards.

Because development projects which thoughtfully consider significant and potentially significant historic resources in the context of preservation objectives and standards early in their planning process would be less likely to result in demolition or insensitive alterations, the Port should develop and adopt a policy which requires such early consideration and which requires projects to be consistent with the standards described in the mitigation measure above. This policy could be adopted separately or could be incorporated into the Waterfront Land Use Plan.

> For example, the implementation recommendation (3) on page V-14 of the Draft Plan could be revised as follows and adopted as policy by the Port Commission concurrent with adoption of the Waterfront Land Use Plan: "Urban design policies and design guidelines, *including standards that identify and discuss the preservation of significant historic architectural resources,* ~~should~~ *shall* be considered in identifying development concepts, and ~~should~~ *shall* be reflected in the specifications included in ~~the~~ request*s* for proposal. *All approval actions by the Port Commission shall be consistent with these urban design policies, design guidelines, and preservation standards.*" (Additions are shown in italics, deletions are crossed-out.)

N-5. To prevent potential deterioration or destruction of historic architectural resources in the absence of specific proposals to restore or rehabilitate them, the Port should prioritize resources in need of repair and maintenance and fund the needed preservation work. Repair and maintenance activities should sustain the existing form, integrity, and materials of an historic resource, and may include treatments such as rust removal, caulking, limited paint removal and reapplication of protective coatings; cyclical cleaning of roof gutter or other drainage systems; installation of fencing, protective plywood, alarm systems or other temporary protective measures; and other stabilization measures. If repair is undertaken, the least degree of intervention should generally be applied, such as patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading historical materials such as masonry, wood, and architectural metals according to recognized preservation methods. Repairing may also include limited replacement in kind, or with compatible substitute material, of extensively deteriorated or missing parts of features when there are surviving prototypes (for example, brackets, dentils, steps, plaster, roofing).

O. ARCHAEOLOGICAL RESOURCES

INTRODUCTION

The No Project Alternative, Alternative A and Alternative B would, in order, represent increased risk to archaeological resources due to excavations and other ground-disturbing activities associated with future development projects in sensitive areas. Because the archaeological potential of no site can be ruled out without a more detailed site-specific evaluation, under all Alternatives and for all sites the following mitigation program is recommended to minimize potential future impacts. Such a program would avoid the near-certainty of impacts on a Plan level, and provide a mechanism for evaluating, managing and reducing impacts for future specific development projects. Implementation of these programmatic mitigation measures would reduce impacts project-related developments might have on buried cultural resources within the Project Area to a less-than-significant level.

MEASURES PROPOSED AS PART OF THE PROJECT

None.

MEASURES IDENTIFIED IN THIS REPORT

O-1a. The Port could add a policy statement to the Plan declaring the avoidance of potentially significant archaeological resources to be the preferred action, whenever feasible, in the management/preservation of potentially significant buried cultural resources. Initial project planning should take identification and protection of these resources into account whenever possible. Such avoidance could take the form of identifying, pursuing and selecting less sensitive alternative sites, or encouraging design modifications such as reducing or eliminating excavation in sensitive areas.

O-1b. Given the certainty that significant historical archaeological resources do exist in the overall Project Area generally, yet the inherent uncertainty about the specific locations and scope of such buried resources, the Port or project sponsor should retain an archaeologist as early as is practical in the site selection or schematic design stage of development projects under the Plan which would involve sub-surface excavation or other substantial soil disturbance of greater than four feet in depth, including submerged lands beneath the Bay. The archaeologist would prepare a brief preliminary site-specific evaluation or letter report, based on existing archival report information, assessing the archaeological sensitivity of the specific site(s) under consideration relative to the scope of excavation proposed. The archaeologist should consider the history of fill soils on the site(s) in their assessment of the potential for significant archaeological resources to exist and be disturbed or destroyed by the contemplated project, and make recommendations on subsequent actions designed to ensure the protection of potentially significant resources.

Based on the initial site-specific letter report, the archaeologist and the Environmental Review Officer (ERO) would determine whether a more detailed site assessment is warranted, the results of which could include an appropriate course of action necessary to minimize the disturbance to significant archaeological resources, and/or maximize information recovery where such disturbance cannot be avoided. Depending on the expected sensitivity of the area to be excavated, this could include a program of pre-construction testing, excavation monitoring, or both. If the ERO concurs with a preliminary evaluation determining that a project site has no potential to contain significant archaeological resources which could be impacted by a proposed development (which may commonly occur in the areas of recent fill or disturbance, such as most of the waterfront south of China Basin), then this measure would be satisfied and archaeological issues no longer a concern for that particular development project.

If, based on the likelihood of encountering significant archaeological resources as identified in the site assessment report(s), the archaeologist and the ERO determine that pre-construction testing is warranted to better determine the probability of finding cultural remains, the sponsor would retain the services of an archaeologist familiar with prehistoric and urban historical archaeology, and San Francisco specifically. The archaeologist would carry out a pre-excavation testing program using a series of mechanical, exploratory borings or trenches and/or other testing methods determined by the archaeologist and the ERO to be appropriate. Some efficiency may be possible by coordinating archaeological sampling with soil borings common to geotechnical and hazardous waste testing.

If, after testing, the archaeologist determines that no further investigations or precautions are necessary to safeguard potentially significant archaeological resources, the archaeologist would submit a written report to the ERO, with a copy to the project sponsor. If the archaeologist determines that further investigations or precautions are necessary, he/she should consult with the ERO and they should jointly determine what additional procedures are necessary to minimize potential effects on archaeological resources.

These additional mitigation measures would be implemented by the project sponsor and might include a program of on-site monitoring of all site excavation, during which the archaeologist would record observations in a permanent log. The monitoring program, whether or not there are finds of significance, would result in a written report to be submitted first and directly to the ERO, with a copy to the project sponsor. During the monitoring program, the project sponsor would designate one individual on site as his/her representative. This representative would have the authority to direct and suspend work at the site to give the archaeologist time to investigate and evaluate archaeological resources should they be encountered.

Should evidence of cultural resources of potential significance be found during the monitoring program, the archaeologist would immediately notify the ERO, and the project sponsor would halt any activities which the archaeologist and the ERO jointly determine could damage such cultural resources. Ground-disturbing activities which might damage cultural resources would be suspended for a total maximum of four weeks over the course of construction.

If prehistoric archaeological deposits are fortuitously discovered, the California Native American Heritage Commission in Sacramento and local Native American organizations should be consulted and involved in making resource management decisions. All applicable legal requirements concerning the treatment of cultural materials and Native American burials should be enforced.

After notifying the ERO, the archaeologist would prepare a written report to be submitted within 10 days first and directly to the ERO, with a copy to the project sponsor, which would contain an assessment of the potential significance of the find and recommendations for what measures should be implemented to minimize potential effects on archaeological resources. Based on this report, the ERO would recommend specific additional mitigation measures to be implemented by the project sponsor. These additional mitigation measures might include a site security program, additional on-site investigations by the archaeologist, and/or documentation, preservation, and recovery of cultural material.

Finally, the archaeologist would prepare a report documenting the cultural resources that were discovered, an evaluation as to their significance, and a description as to how any archaeological testing, exploration and/or recovery program was conducted.

Copies of all draft reports prepared according to this mitigation measure would be sent first and directly to the ERO for review. Following approval by the ERO, copies of the final report would be sent to the President of the Landmarks Preservation Advisory Board, the Historical Resources Information System Northwest Information Center. The Office of Environmental Review should receive three copies of the final archaeological report.

NOTES - Mitigation Measures

[1] U.S. Department of the Navy, Western Division, Naval Facilities Engineering Command, EIS: Homeporting Battleship Battlegroup/Cruiser Destroyer Group, p. 7-4, 1987.

[2] Okubo, Anne, Port of San Francisco, telephone conversation, January 22, 1996.

[3] San Francisco Public Utilities Commission, Bureau of Energy Conservation, An energy Plan for Mission Bay, Proposed Energy Efficiency Recommendations at the Mission Bay Project, 1987.

VII. VARIANTS TO THE ALTERNATIVES

This chapter considers four variants to the EIR Alternatives analyzed in Chapters IV, V, and VI, Environmental Setting, Environmental Impacts, and Mitigation Measures. The discussion focuses on how the impacts of each variant would differ from those of the parent Alternatives.

The variants include: 1) potential development of a ballpark at Third and King Streets, as a variant to Alternative B (with brief discussion of potential development of a sports arena instead of the ballpark); 2) removal and/or closure of certain piers that would be surplus to the needs of maritime uses, with the resulting Bay frontage to be reserved as open space, as a variant to Alternative A; 3) potential development of a sports arena on Rincon Hill, as a variant to the cumulative context of all alternatives; and 4) potential development of residences and retail uses near China Basin Channel, within the Mission Bay area and outside the Waterfront Land Use Plan (WLUP) Project Area, as a variant to the cumulative context of all alternatives. The last two variants reflect uses outside the WLUP Project Area, and are therefore examined in less detail.

The purpose of describing and analyzing the variants is to ensure that the EIR addresses at least generally the potential cumulative effects of projects (construction of a ballpark or arena) and development options (potential removal of several piers and potential changes to the approved Mission Bay Plan) that could affect the Project Area. Some of the variants would require project-specific environmental review prior to implementation.

VARIANT 1: CHINA BASIN BALLPARK (ALTERNATIVE B)

This variant analyzes the general potential impacts of a ballpark proposed by the San Francisco Giants on an approximately 12.5-acre site within the WLUP Project Area, to include Pier 46B, Seawall Lot 336, the Caltrans site, Berry Street between Second and Third Streets, and Second Street between King and Berry Streets. In March 1996, San Francisco voters approved amendment of the City Planning Code and zoning map to create a Northeast China Basin Special Use District that would permit a ballpark (with conditional use authorization). However, the proposed ballpark would be subject to project-specific environmental review. This analysis, therefore, is not intended to be comprehensive; rather, it is intended to provide a generalized review of potential environmental effects given that the WLUP states that a ballpark at China

Basin could be an acceptable use provided certain conditions are met. The ballpark, which could be in operation by 2000, is considered a variant to Alternative B.

The Draft WLUP allows Sports Facilities as an acceptable land use in the China Basin Mixed Use Opportunity Area, including the proposed ballpark site. The Plan envisions a sports arena of no more than 22,000 seats. In June 1994, the Waterfront Plan Advisory Board recommended to the Port Commission that "sports facilities with seating capacity greater than 22,000" be added to the unacceptable non-maritime land use list. The Draft Waterfront Land Use Plan states that "the decision to allow a ballpark . . . in this Opportunity Area should be postponed until . . . the public and affected regulatory agencies have had the opportunity to determine whether it is acceptable." The Development Standards for the China Basin Mixed Use Opportunity Area include the following standard for a ballpark (Draft Waterfront Land Use Plan, January 1995, page IV-59):

> A ballpark may be an acceptable land use option for Pier 46B, Seawall Lots 335 and 336, and Assessor's Block 3794 (if acquired by the Port) if the Port Commission determines the development of this use is in the best interest of the Port, and this use is approved by San Francisco voters at an election, the Bay Conservation and Development Commission, and the California State Lands Commission, which is responsible for ensuring that the Port's use of property is consistent with the public trust grant from the State (the *Burton Act*). If a ballpark is proposed, amend the existing height limit to accommodate the structure and include the following in the project: 1) site design, public access improvements and architectural treatments which are oriented to the Bay; 2) a transportation plan that includes, but is not limited to, incentives to maximize use of public and group transit, in order to minimize parking requirements; 3) a parking program which maximizes shared use arrangements with parking operators in the vicinity and locates any new parking areas away from the water; and 4) a compensation package acceptable to the Port Commission that ensures a fair market return to the Port for this use of its property.

This variant assumes that a ballpark and associated retail and food and beverage establishments would be developed in the area bounded by Second, Third and King Streets and the Bay (see Figure 5a, p. 30), in the China Basin Mixed Use Opportunity Area. Details of land uses that would be associated with the ballpark, described below, were preliminary at the time this variant analysis was carried out and are subject to change. The ballpark capacity would be 42,000 seats; a music pavilion that could be set up within the proposed ballpark during the baseball off-season would accommodate about 8,000 persons. The ballpark would include an outdoor sound and public address system to accommodate baseball games and concerts.

About 60,000 square feet (sq. ft.) of restaurant and bar space and about 20,000 sq. ft. of ground-floor retail space are also proposed, as are executive offices for the San Francisco Giants 24,000 sq. ft.) and a potential television-radio broadcast studio of about 25,000 sq. ft. The structure would be 130 feet tall at the top of the windscreen around the stands, with light standards likely extending above the windscreen. The streetfront walls on Third and King Street would be 80 feet in height (about six stories); the full 130-foot height would be less apparent on Third Street, where the current design indicates a setback, while there would be only a slight setback on King Street. The ballpark would be set back from the shoreline to allow for a public access walkway along the Bay. A ferry landing is proposed along the waterfront edge.

The Giants propose, on an interim (5- to 10-year) basis, to provide 5,000 to 5,500 off-street parking spaces on land leased from Catellus Development Corporation (within the Mission Bay project area) and/or the Port. Longer-range plans, to occur most likely by the 2010 WLUP "horizon year" examined in this EIR and contingent on substantial buildout of Mission Bay, call for approximately 4,800 off-street spaces on Catellus property, about two-thirds of which could be in a subsurface garage on the triangular site bounded by Third and Fourth Streets and China Basin Channel. (This site, which is outside the WLUP area, was proposed for hotel and high-density residential use under the approved [but now subject to revision, according to the property owner] Mission Bay Plan.) Existing on- and off-street parking also would be used, particularly for night and weekend events; the daytime supply of existing parking spaces is limited.

In addition to street access, the ballpark would be served by the planned Muni Metro extension; light-rail vehicles would stop at an already-constructed location on King Street between Second and Third Streets, adjacent to the ballpark. Four Muni bus lines (15, 30, 42, 45) operate within about one block of the ballpark site. It is assumed for this analysis that Muni would operate extra Metro cars and buses to augment regular service to baseball games and other events at the ballpark. The ballpark site is also within one block of the CalTrain station at Fourth and Townsend Streets. It is assumed that, if warranted, additional CalTrain service would be provided to and from events, and that other regional transit operators, including SamTrans and Golden Gate Transit, would provide direct service to the ballpark as they currently do for Giants baseball games and other events at 3Com Park at Candlestick Point. The Giants envision ferry service to and from the ballpark, as well.

Public Plans, Policies and Permits

The proposed ballpark would not comply with current plans and policies for the site and would require amendment of various plans and ordinances prior to construction. As noted, the Draft WLUP leaves open the question of a ballpark, pending approval by San Francisco voters, the Bay Conservation and Development Commission (BCDC) and the State Lands Commission. As also noted, in March 1996, San Francisco voters approved amendment of the City Planning Code and zoning map to create a Northeast China Basin Special Use District that would permit a ballpark (with conditional use authorization).

The ballpark evaluated in this variant, at 130 feet in height, would be within the amended 150-foot height limit for the District.

In connection with the WLUP, the Port proposes amending the Northeastern Waterfront Plan (NWP) of the San Francisco Master Plan to eliminate a policy of continuing maritime use on Pier 46B. The Port also proposes revision of a policy in the NWP's North China Basin subarea specific to Pier 46B to allow assembly and entertainment or commercial recreation activities while continuing waterside maritime operations. Further NWP amendments could be proposed to specifically allow a ballpark at this location. Other General (Master) Plan amendments could be necessary or desirable to accommodate the proposal.

As noted in Section IV.A, Environmental Setting, Public Plans, Policies, and Regulatory Agencies, BCDC has permit authority over all uses on San Francisco Bay and the shoreline, generally in a 100-foot band along the shore. The proposed ballpark would be within this shoreline band, and would be subject to BCDC jurisdiction. BCDC is charged, among other duties, with protecting maritime uses of the shoreline and with ensuring maximum feasible public access to the Bay. The ballpark site is not within the "Port Priority Use Area" defined in the BCDC/Metropolitan Transportation Commission *Bay Area Seaport Plan*. (This area, from Pier 48 to Pier 96, is required to be maintained for cargo shipping, ship repair, fishing and other Port-related operations and support services to satisfy future regional needs.) The ballpark would have to be found consistent with the McAteer-Petris Act (the State legislation that created BCDC), as well as BCDC's *San Francisco Bay Plan* and the *San Francisco Waterfront Special Area Plan*. The proposed ballpark would include a public access walkway along the Bay and possibly a ferry terminal.

As noted in Section IV.A, all uses on Port property must promote the "public trust." The public trust doctrine of the California Constitution defines allowable uses as "commerce, navigation and fisheries, recreation and preservation of those lands as ecological units." The Port would request a determination by the State Lands Commission that the proposed ballpark would be considered an acceptable public trust use. If the State Lands Commission found the use to be inconsistent with the trust, the use could still be developed if the site were determined to be surplus to the needs of the trust, or exchanged for another non-trust property of equal or greater value.

The proposed ballpark could conflict with the Redevelopment Agency's current plans for South Beach Park, which is proposed for expansion into a portion of the area that would be occupied by the ballpark. Expansion of the Rincon Point-South Beach Redevelopment Area to include the ballpark site is being considered as one possible means to utilize tax increment funding. Expansion of the redevelopment area could also entail reconfiguration or reduction in size of the future park expansion and/or relocation to or within the ballpark site of certain uses proposed within the redevelopment area, such as parking for South Beach Harbor.

Land Use

Although a ballpark is not specifically included in the primary land uses assumed for Alternatives A and B (or in the No Project Alternative), Alternative B does contemplate the addition of about 350,000 sq. ft. of assembly/entertainment/recreation space in the South Beach/China Basin subarea.[1] The proposed ballpark would include ancillary retail and restaurant uses that would be compatible with existing and planned uses in the subarea. The ballpark itself would be a unique land use that would not be directly comparable to any existing or planned uses. However, it could generate land use conflicts with existing and potential new residential and commercial uses in that it would result in periods of intense activity interspersed among longer periods of relative inactivity, except for ongoing ancillary retail and restaurant uses. The result could be physical impacts in the form of increased traffic, noise, light and glare, and emissions of criteria air pollutants; those effects are discussed in general form below. As noted previously, the proposed ballpark would be subject to project-specific environmental review that would fully disclose potential impacts.

The nearest residential uses to the proposed ballpark site are the Steamboat Point apartments, on The Embarcadero between Townsend and King Streets, about one (short) block northeast of the ballpark site, and the South Beach Marina Apartments, a multi-building complex bounded by Colin P. Kelly, Townsend, Delancey (First) and Brannan Streets, about one (short) block north. Other nearby residential uses include the Delancey Street Foundation complex and Bayside Village, on opposite sides of Brannan Street between Delancey (First) Street and The Embarcadero, about two blocks northeast; residential units around South Park, about 1½ blocks north; and other scattered residential units, including the houseboat community at China Basin Channel and recently developed loft space at Fourth and Brannan Streets and Second and Bryant Streets, within two to three blocks. The approved Mission Bay plan (no longer expected to be implemented as approved) envisioned housing along Fourth Street south of China Basin

Channel, within about one block of the proposed ballpark site. (Possible housing in the Mission Bay area north of China Basin Channel is discussed under Variant 4, p. 708.)

Construction of a ballpark would displace existing uses on the site, including the Port's maintenance facility at Pier 46B, which could be relocated as part of Alternative B, as well as a commercial tugboat service. Existing service and light industrial uses on Berry Street between Second and Third Streets would also be dislocated, and Berry Street, as well as Second Street south of King Street, would be closed.

Population, Housing and Employment

The ballpark would introduce additional year-round employees to the South Beach/China Basin subarea. In a cumulative sense, the addition would be statistically insignificant when compared to the potential additional employment in the Project Area under Alternative B (or the potential change in employment Citywide from 1995 to 2010). Ballpark employment would primarily represent a shift from current 3Com Park summertime employment.[2] Increased baseball attendance projected by the Giants could create additional ballpark support jobs for vendors, ticket sellers, and the like. Additionally, the proposed retail and restaurant space would create additional year-round employment, although not beyond that anticipated for the subarea in Alternative B. Increased attendance and a location closer to Downtown San Francisco restaurants and shopping opportunities would result in growth-inducing impacts: increased retail demand in San Francisco, a substantial portion of which could be captured in the vicinity of the ballpark. Those impacts cannot be quantified at this time.

Construction of the ballpark and associated retail and restaurant space would add to Citywide and regional employment on a temporary basis during the planning, design and construction period.

Transportation, Circulation, and Parking

A sports venue such as a ballpark has unique transportation effects due to its irregular but relatively very intense trip generation peaks. That is, in contrast to a day-to-day use, such as an office building or retail store, a ballpark is unused much of the year, and even during most of a day when a game occurs, but the occasions when a game occurs result in trip generation that is much greater and more concentrated in time than for a more typical land use. For this analysis, the following assumptions were used.

The proposed ballpark would host 81 regular-season baseball games in a typical season (plus one or two pre-season exhibition games versus the Oakland A's, based on recent history). In years when the San Francisco Giants were to participate in post-season play, as many as 10 additional home games could occur; this latter situation is considered atypical and is not considered here. Based on information provided by the Giants, approximately 40 of the regular-season games would occur on weekday nights, starting at 7:30 P.M. About 26 games would occur on weekend afternoons, generally starting at 1:00 P.M., and about 15 games would occur on weekday afternoons, starting between 12 noon and 1:00 P.M.[3,4] This analysis considers in detail only the most common weekday night games, with a brief discussion of weekend and weekday afternoon games. The analysis also assumes a sold-out game, thereby presenting a conservative overestimate of impacts, as it is not likely that all home games would sell out.

Based on analysis performed for the Giants,[5] it is assumed that for weekday night games, up to about 75 percent of baseball fans would travel to games by automobile. This compares to approximately 88 percent of baseball fans driving to 3Com Park, according to surveys conducted in 1981 and 1988. (The average vehicle occupancy of 2.7 persons per vehicle is assumed to remain the same.) About 14 percent of fans are assumed to arrive by transit, compared to about 6 percent transit use at 3Com Park. About 2 percent are assumed to walk or bicycle (virtually none at Candlestick), another 2 percent would be dropped off (including taxi use), and about 7 percent would arrive by charter bus (compared to about 4 percent at 3Com Park). The major change in modes is projected to be about 8 percent of fans shifting from automobile use to transit use, based primarily on better transit accessibility. It is further assumed that 75 percent of vehicle trips and 95 percent of transit trips to the ballpark would occur in the one hour prior to the start of a game (*i.e.,* 6:30 P.M. to 7:30 P.M. for a weekday night game). Half the remaining trips would occur between 6:00 P.M. and 6:30 P.M., and the other half, prior to 6:00 P.M. Therefore, this analysis assumes that 12.5 percent of vehicle trips to the proposed China Basin ballpark would occur in the P.M. peak hour (5:00 P.M. to 6:00 P.M.).

This analysis compares projected 2010 P.M. peak-hour traffic conditions at seven intersections analyzed in Section V.D., Environmental Impacts, Transportation, to conditions that would be expected to occur in 2010 with the proposed ballpark, assuming a sellout crowd of 42,000. It is important to note that the comparison of P.M. peak-hour conditions means that most ballpark traffic is not considered since, as noted above, most ballpark vehicle trips and nearly all ballpark transit trips would occur later. This analysis is appropriate, however, for a comparison of impacts of Alternative B with and without the proposed ballpark, since the analysis of Alternative B (and, indeed, the entire EIR traffic analysis) is based on P.M. peak-hour conditions because this hour has the largest amount of traffic and transit use on City streets and freeways. Table 55 compares intersection operations as reported in Section V.D to operations at those intersections with implementation of the ballpark variant. The intersection analysis provides an estimation of the approximate magnitude of impact of ballpark-generated traffic. The analysis did not rely on the TRAFFIX model used in the analysis of the primary EIR Alternatives; rather, intersection impacts were gauged based on review of the TRAFFIX model worksheets and professional judgment concerning the level of traffic impact relative to vehicle trips that would be generated by the proposed ballpark. This analysis should therefore be viewed as preliminary. As noted previously, the proposed ballpark would be subject to project-specific environmental review at a substantially greater level of detail than was performed for this EIR.

TABLE 55: P.M. PEAK HOUR INTERSECTION LEVEL OF SERVICE (LOS) COMPARISON - BALLPARK VARIANT TO ALTERNATIVE B (YEAR 2010)

Intersection	1993 Existing	2010 Alternative B	2010 Alt. B + Ballpark	
	LOS	LOS	Vehicles Added/a/	LOS
15. Embarcadero / Harrison Street	E	B	45 SB	D or better
16. Embarcadero / Bryant Street	F	F	45 SB	F
17. Embarcadero / Brannan Street	F	D	115 SB	D/E
18. Third Street / King Street	F	E	80 EB	E
19. Fourth Street / King Street	C	B	320 SB& 115 EB	D or better
20. Third Street / 16th Street	B	B	170 NB	D or better
21. Third Street / Mariposa Street	B	B	170 NB	D or better

/a/ Number of vehicles added due to ballpark traffic and direction of travel (*e.g.*, 45 SB indicates 45 added vehicles in the southbound direction).

SOURCE: Robert L. Harrison Transportation Planning; Korve Engineering; Environmental Science Associates

As shown, of the seven intersections analyzed, the ballpark could degrade the level of service at one intersection to poor (from LOS D to LOS D/E); would contribute to degraded (LOS E or F) conditions, but would not affect level of service, at two intersections; and would increase traffic, but not result in unacceptable levels of service, at four intersections. As noted, this discussion is relevant for the P.M. peak hour only. Traffic conditions in the hour immediately preceding a baseball game (6:30 P.M. to 7:30 P.M. for a weekday night game), when there would be substantially more ballpark-generated traffic, could be worse or better than the conditions described above, depending on how much non-baseball traffic would be on the streets at that later hour. The percentage of ballpark-generated traffic at each intersection would almost certainly be greater between 6:30 P.M. and 7:30 P.M. than in the P.M. peak hour.

The new King Street off- and on-ramps from and to Interstate 280, which would be constructed by the time the ballpark were to open in 2000, and King Street itself, would carry substantial volumes of traffic to and from the ballpark. Other streets that would be expected to be affected would include Third Street (access to and from the south, including the I-280 ramps at Mariposa Street), Second, Third, Fourth, Fifth, Harrison and Bryant Streets (access to and from the Bay Bridge), The Embarcadero (access to and from the Bay Bridge and points to the north), and Brannan, Townsend and King Streets (local access). Many of these streets are those affected by typical peak-hour traffic flows; in most cases, traffic heading to a weekday night baseball game would create congested conditions after the peak hour.

Depending on the results of further traffic analysis, mitigation that could be incorporated into the project could include police traffic control at selected intersections to improve traffic flow, prohibitions on particular turning movements before and after baseball games (*e.g.*, No Left Turn at the I-280 northbound off-ramp at Mariposa Avenue [pre-game] to keep ballpark traffic from affecting local intersections on Potrero Hill), and parking restrictions before and after games to provide additional travel lane capacity.

Regional impacts could result from ballpark traffic traveling from the East Bay, South Bay and North Bay. This analysis considers only net new vehicles beyond those that would already be traveling to a baseball game at 3Com Park. Because this analysis assumes a sellout crowd of 42,000 fans at the proposed China Basin ballpark, and because the Giants have averaged about 23,500 fans per game in recent years, the analysis of regional impacts assumes that half of the capacity crowd of 42,000 fans would result in net new regional trips. The analysis may overestimate impacts in that it assumes all games would be sold out in the new location.

Vehicles added to the regional roadway network during the P.M. peak hour would be traveling in the opposite (inbound) direction from the peak (outbound) direction of traffic from San Francisco. Trip assignments of P.M. peak-hour weekday vehicle trips generated by a new ballpark at the regional highway screenlines would be: North Bay (Golden Gate Bridge) =

+70 southbound vehicles; East Bay (Bay Bridge) = +245 westbound vehicles; South Bay (U.S. 101) = +160 northbound vehicles; and South Bay (I-280) = +160 northbound vehicles. As with the analysis of intersection impacts, the regional impacts analysis should be considered preliminary.

As shown in Table 35, p. 461, of this report, there is currently unused capacity at the regional screenlines in the counter-peak direction. Projected 2010 conditions (see Table 35) indicate expected continued reserve capacity available at those screenlines, although the Golden Gate Bridge, with only two southbound lanes during the P.M. peak period, will approach its "maximum practical capacity" (defined on p. 460 and in Appendix F of this report as a volume-to-capacity [v/c] ratio of 0.92 to 0.95). The addition of net new regional trips to the ballpark would increase the v/c ratio for the southbound Golden Gate Bridge from 0.92 to 0.94, virtually its maximum practical capacity, and delays to vehicular travel would worsen incrementally on the bridge. The v/c ratio for the westbound Bay Bridge would increase from 0.83 to 0.85. Delays to vehicular travel would worsen incrementally on the bridge, but the variant trips themselves would not cause a significant impact at this location. Traffic inbound to the ballpark, while not in the peak direction, could add to congestion on streets leading to Bay Bridge and freeway approaches by conflicting with peak-direction traffic at various intersections. Increases in v/c ratio at the other regional screenlines (i.e., U.S. 101 [0.73 to 0.74], and I-280 [0.46 to 0.48]) would also occur, but the effect would be less than significant. Inbound ballpark traffic could mix with traffic outbound to the East Bay, worsening congestion on local streets and freeways (between screenlines).

Because of the location of the proposed China Basin ballpark site relative to 3Com Park, there could be a shift in travel times, with East Bay and North Bay fans crossing the respective analysis screenlines and entering San Francisco several minutes later than they now do to reach 3Com Park. Therefore more people, on a percentage basis, are currently traveling over the Golden Gate and Bay Bridges during the P.M. peak hour (5:00 P.M. to 6:00 P.M.) to reach 3Com Park prior to game time than would do so to reach the proposed ballpark, which is located closer to those screenlines than 3Com Park. Conversely, fewer people, on a percentage basis, are currently traveling north on U.S. 101 and I-280 during the P.M. peak hour to reach 3Com Park prior to game time than would do so to reach the proposed ballpark.

It is anticipated that the EIR for the proposed ballpark would fully disclose traffic impacts and identify appropriate mitigation, where feasible.

Transit ridership to the proposed China Basin ballpark would be expected to increase substantially from existing conditions at 3Com Park. As noted above, the ballpark would be served directly by Muni Metro light-rail service, four Muni bus lines, and CalTrain (one block away). Muni currently operates "ballpark express" service to and from Giants games. However, in recent years, equipment shortages have sometimes prevented Muni from providing enough buses to meet demand, particularly for high-attendance games. With scheduled service available to the proposed site, it would be expected to be less problematic for Muni to accommodate baseball fans, particularly on the light-rail line, where longer-than-normal trains could be operated past the evening commute period (and after games). According to a preliminary analysis by the San Francisco County Transportation Authority,[6] demand for Muni service to a weeknight game would require the addition of approximately 11 Metro light-rail vehicles beyond currently anticipated service when the ballpark opens. Post-game travel would require about 13 additional Metro cars and six additional buses beyond scheduled service.

Although Muni operations in 2010 are difficult to predict, particularly outside the peak hour, mitigation for the proposed China Basin ballpark could include request that the Giants subsidize (starting at the scheduled ballpark opening in 2000) some portion of the additional service Muni is required to provide to adequately serve the ballpark. CalTrain would be expected to have adequate capacity in the northbound (non-commute) direction to accommodate baseball fans traveling to a weekday night game, and newspaper reports have indicated that CalTrain would schedule southbound train(s) 15 to 20 minutes after a game to serve departing patrons. Again, if extra service were required, the Giants could be requested or required to provide some subsidy. Similarly, BART service and bus and ferry service from the East Bay and North Bay could require some subsidy. It is anticipated that the EIR for the proposed ballpark would fully disclose transit impacts and identify appropriate mitigation, where feasible.

It should be noted that the transportation analysis in this EIR assumes the construction of an extension of CalTrain service to downtown by 2010. At this time, it is not known if the proposed CalTrain extension would result in continued operation of the existing CalTrain station at Fourth and Townsend Streets, near the proposed ballpark. It can be assumed that if the ballpark is ultimately constructed, its presence at Second and King Streets would be an important factor in any decision to retain the existing CalTrain station (or a comparable stop to serve the ballpark). Nevertheless, continued direct CalTrain service to the proposed ballpark is not a certainty. Clearly, lack of direct CalTrain access would diminish the transit accessibility of the ballpark from points on the San Francisco peninsula. Lack of direct CalTrain access could also result in increased demand for Muni service, if CalTrain riders to downtown San Francisco were to ride

Muni to the ballpark. The EIR for the proposed ballpark will consider transit effects, including potential loss of direct CalTrain service, in detail.

Based on analysis performed for the Giants,[7] there are approximately 6,430 existing parking spaces available within about a 15-minute walk of the ballpark site on weekday nights. As noted in the description of this variant, the Giants propose, on an interim (5- to 10-year) basis, to provide 5,000 to 5,500 off-street parking spaces on land leased from Catellus Development Corporation (within the Mission Bay project area) and/or the Port. Longer-range plans, to occur most likely by the 2010 WLUP horizon year analyzed in this EIR and contingent on substantial buildout of Mission Bay, call for approximately 4,800 off-street spaces on Catellus property, about two-thirds of which could be in a subsurface garage on the triangular site bounded by Third and Fourth Streets and China Basin Channel. Based on the travel assumptions described above, a sellout baseball game would generate demand for approximately 11,670 parking spaces,[8] which could be met by the proposed parking plus the available weeknight supply (unless the supply were to diminish in the future). It is generally assumed that, when parking is not available, persons shift to other modes of travel, increase vehicle occupancy, or avoid making trips.

Assuming that a substantial portion of ballpark parking would be south of China Basin Channel, there would be a need for pedestrian access across the channel. Currently, this access is provided only via the Lefty O'Doul (Third Street) and Peter Maloney (Fourth Street) Bridges. Improvements to those bridges, both eligible for the National Register of Historic Places (the Lefty O'Doul Bridge is also a San Francisco landmark), would be subject to restrictions because of their historic importance. Pedestrian flows would be considered in detail in the ballpark EIR.

Weekend afternoon games (about 32 percent of the total of 81 regular-season games) would be expected to have less traffic impact than weekday night games because weekend traffic is generally lighter than during the weekday early evening. Because there is less scheduled transit service on weekends, pre-game conditions could require the addition, beyond scheduled service, of about 12 Muni Metro cars, and post-game conditions could require an additional 14 Metro cars and 2 buses, beyond scheduled service.[9] Based on analysis performed for the Giants, about 6,170 existing parking spaces (plus the ±5,000 proposed spaces on Catellus property) would be available on weekends within about a 15-minute walk of the ballpark site, slightly fewer spaces than for a weekday night game.[10]

Weekday afternoon games (about 19 percent of the total of 81 regular-season games) could have greater impacts than weekday night games, because in the post-game condition, fans leaving the ballpark could mix with P.M. peak-hour commuters. (The typical baseball game lasts almost 3 hours, meaning that traffic and transit impacts of a 1:00 P.M. game would begin to be felt at the 4:00 P.M. start of the P.M. peak period. A 12:00 noon start would provide departing baseball fans with a one-hour "head start" on the commute period and reduce these traffic impacts.) Many of the trips from an afternoon game would be the same as those that now come from 3Com Park, although timing would be somewhat different for the various freeways and bridges. Thus, not all of the trips would be new to the system. As noted above, this analysis assumes about half of the regional ballpark-generated traffic would be net new trips.

Because only about 1,850 existing parking spaces (plus the proposed ± 5,000 spaces on Catellus property) would be available during weekday afternoons within about a 15-minute walk of the ballpark site,[11] or about 40 percent fewer than the weekday night total, parking impacts would be relatively greater for weekday afternoon games, compared to weekday night games; it would be expected that the lack of parking would result in more fans using alternative travel modes, such as carpooling, transit, taxis, walking, and bicycles. This would result in demand for about 20 additional Muni Metro cars beyond those available in scheduled pre-game service and, in the post-game condition, about 20 Metro cars and 12 buses more than scheduled service.[12] These impacts would occur relatively infrequently, about 15 days per year.

Use of the music venue within the ballpark, anticipated to occur during the baseball off-season, would have substantially less traffic, transit and parking impact than would the ballpark, based on an attendance capacity of 8,000 persons for the music venue, compared to 42,000 for the ballpark. However, traffic increases in the vicinity would be obvious before and after such events.

Noise

The proposed ballpark could have noise impacts that would be felt by nearby existing residential uses in the South Beach/China Basin subarea, as well as planned Mission Bay residential uses. Existing noise from maritime and other commercial/industrial operations in the area to be displaced by the ballpark (Port Maintenance activities, tug and tow, freight loading and unloading) would disappear.

Construction noise would temporarily affect nearby residences and commercial uses, beginning with demolition of existing structures on the proposed ballpark site. Given that the ballpark site is located on filled land, construction activities would most likely include extensive pile driving.

The open-air ballpark would be a source of noise to surrounding uses. With a height of about 130 feet, the top of the structure would be above the top levels of most nearby residential uses, including Steamboat Point and most of the South Beach Marina apartments, as well as planned nearby residential buildings in Mission Bay. At 130 feet, the ballpark would be approximately the same elevation as the upper level of the 14-story South Beach Marina residential tower. Therefore, there would be no direct (unshielded) path for crowd noise or amplified announcements to reach most residents, except possibly those in the upper level(s) of South Beach Marina complex.

Without detailed design information on the ballpark structure, it is not possible to estimate additional impacts of reflected or structurally attenuated noise, which would likely be noticeable in parts of the South Beach/China Basin subarea, Mission Bay, the South of Market, Rincon Hill, and possibly Potrero Hill. If the upper levels of the main structure were open below the roof line, more off-site receptors would be exposed to direct-path noise than if the structure were of solid construction up to its roof line. Also, if the ballpark were not the same height around its entire perimeter (for example, if the structure at the outfield end were open or lower than the structure at the home-plate end), some crowd or loudspeaker noise could have a direct path toward the outfield end. The current proposal would place the right-field wall along the Bay and would have this portion of the exterior wall relatively short, with a somewhat taller exterior wall behind left field and center field, adjacent to South Beach Harbor. This design would be expected to deflect some sound outward towards the Bay. In general, crowd and loudspeaker noise from night ballgames at the ballpark would be more noticeable than noise from daytime events, because the background noise levels at night would be lower than normal daytime noise levels, and because more residents would be at home at night than in the afternoon. Closed windows would attenuate outside noise; however, residents would be exposed to outside noise when they were outdoors, or indoors with windows open. In general, residents closest to the ballpark would experience the highest noise levels from it. Intervening structures would provide partial shielding for residents and employees, such as dwellings and offices around South Park and the loft buildings at Second and Bryant and Fourth and Townsend Streets.

The Giants could be required to carry out a noise study, and implement the mitigation measures suggested by it. Noise shielding (for example, a solid wall up to the roof line) could be imposed as a mitigating condition of project approval.

One source of noise would be the crowds of up to 42,000 fans leaving the ballpark after a baseball game, or, to a lesser degree, up to 8,000 persons leaving the music venue following a concert or other event. The impact would be greatest following a capacity night game, when many nearby residents would be asleep. Pedestrians would be noisy as they left the ballpark; motorists leaving parking lots and on-street parking spaces would generate noise by starting their cars and might blow their horns as they depart. Mitigation measures for these impacts, such as additional sound insulation in surrounding buildings, could be needed, and would be considered in any project-specific environmental review of a ballpark if the impacts were found to be potentially significant.

Traffic noise would have more substantial impacts following a night game, when traffic volumes near the ballpark would be most concentrated and background traffic volumes would be substantially lower than before a game. Nearby residential uses, including those at Steamboat Point, South Beach Marina, Bayside Village and the Delancey Street Foundation, could be affected by traffic noise of vehicles traveling to and along The Embarcadero. Residents on Second Street, Third Street, and other streets could be affected by traffic noise of vehicles traveling to the Bay Bridge. Pre-game traffic for night games would have limited noise effects in the P.M. peak hour, because the relative increase in traffic volumes would not be substantial on most streets. (Traffic noise likely would be perceptible as game time approached and traffic volumes increased, after the P.M. peak hour.)

Air Quality

The major air quality impacts of the ballpark would result from increased local and regional vehicular traffic. Locally, the impacts of the ballpark would reflect the increased emissions of carbon monoxide (CO) along congested streets and at congested intersections. Section V.F., Air Quality, states that no violations of State or federal CO standards are expected under any of the alternatives in the year 2010. Table 55, p. 679, shows that most analyzed intersections would have somewhat higher volume-to-capacity ratios during the P.M. peak hour than those during the typical P.M. peak hour (without the ballpark) under Alternative B. However, the increased volumes would not cause the one-hour CO standard to be violated, either in the P.M. peak hour or in the hour immediately before a baseball game, when background CO concentrations would be lower.

The main effect would be on the eight-hour CO concentrations, because a ballpark scenario would extend the duration of congested conditions at local intersections later into the evening (for night games, which would be the most common weekday events) and earlier into mid-afternoon (for day games, about 15 times per year). The additional traffic volumes potentially could cause violations of the eight-hour CO standard, if the traffic levels were to occur at time of worst-case meteorology, the basis of the carbon monoxide calculations in Section V.F., Air Quality, Table 44, p. 524. However, that worst-case meteorology is essentially a winter season phenomenon, resulting from the lower wind speeds and the nighttime radiation inversions that occur in the winter season. Therefore, the worst-case meteorology corresponds to a time when no baseball is played. The ancillary retail and restaurant uses would generate year-round traffic, but not in volumes that would result in measurable impacts, and not in excess of volumes already assumed for Alternative B.

Regional air quality impacts would occur to the extent that the Giants' projections of increased attendance are realized. Some of the emissions generated by a San Francisco ballpark already occur from 3Com Park and are measured at BAAQMD monitoring stations. Assuming capacity attendance occurred more often in the future, the proposed ballpark could, by itself, generate traffic-related emissions of criteria pollutants in excess of Bay Area Air Quality Management District thresholds for hydrocarbons, particulates and nitrogen oxides. This will be analyzed in detail in the project-specific EIR.

Mitigation measures for air quality impacts would be those which reduce vehicle trips, described in Section VI.D, Transportation, pp. 644-647.

Visual Quality and Urban Design

As noted, the proposed ballpark would occupy a site along the Bay front, between Second and Third Streets (essentially between South Beach Harbor and China Basin Channel). At 130 feet, the ballpark would be taller than all buildings in the vicinity, with the exception of the uppermost points of the South Beach Marina apartment complex (about 130 feet tall at the base of the tallest tower's pointed roof). The proposed ballpark would be within the amended 150-foot height limit approved by the voters in March 1996. The EIR for the proposed ballpark would analyze the mplications of structures at heights proposed in the development application.

At 80 feet, the ballpark's streetfront walls would also be taller than most nearby structures; the streetfront would be comparable in height to three existing buildings on the south side of Townsend Street between Second and Third Streets (123-139 Townsend), which are 70 to 80 feet tall. The rear of the Townsend Building (123 Townsend) extends to King Street, where it is about 80 feet tall immediately across the street from the ballpark site; no other buildings facing the site on King Street are more than about 50 feet tall. The China Basin Building, across Third Street from the ballpark site, is also 80 feet tall. The current ballpark design calls for streetfront walls that would be designed to be compatible with existing older warehouses in the vicinity.

View blockage would be minimal, despite the mass and height of the proposed ballpark, because the project site and vicinity are level. Views to the west and southwest from the newly created South Beach Park (south and east of the Embarcadero between Townsend and Second Streets) are partially obscured by existing two-story structures on Second Street, and by the Ship Clerks Association/International Longshoremen's and Warehousemen's Union Building at 4 Berry Street and several mature pine trees surrounding this building. Views from along Berry Street of Twin Peaks and Diamond Heights to the southwest would be eliminated, since the ballpark would occupy the Berry Street right-of-way. A similar view from King Street would be partially obscured, and partial views of the Lefty O'Doul (Third Street) Bridge and of Potrero Hill from South Beach Park would be blocked. The view from along Berry Street of the East Bay Hills would also be eliminated. Partial views from Third Street (both north and south of China Basin Channel) of the Bay Bridge and of downtown buildings to the north and northeast would be blocked. The proposed ballpark would be visible in long-range views from Potrero Hill, although it would be partially obscured by the 80-foot-tall China Basin Building on Berry Street.

The ballpark would only minimally affect views of San Francisco Bay, which are generally obscured by existing structures, particularly those at Pier 46B. The ballpark would block partial views of the Bay and the East Bay Hills, through existing trees, from Second Street between Townsend and King Streets and from King Street west of Second Street. New public views of the Bay would be afforded from the pedestrian promenade on the water side of the proposed ballpark.

The ballpark would substantially increase night lighting in the area during night games (about 40 nights per year). The following analysis of potential nighttime lighting effects is taken from Appendix M of the Mission Bay EIR.[13]

Night illumination of outdoor areas can affect sensitive receptors in several ways. The brightness of the light source (*i.e.,* its intensity) can cause glare when the light source is viewed directly. Generally, ballpark and stadium lamps are of high intensity, can have considerable beam widths, and are oriented about 22 degrees to 45 degrees down from the horizontal, so the light from several lamps can be visible at the same time from many areas.

Light sources can also annoy people at night when the light source is not viewed directly. Where intense lighting is viewed against a dark background, the contrast attracts the attention of the viewer and could be considered annoying. Under low-light conditions, the human eye adjusts to the brightest light within view. If the range of light intensity to which the eye is exposed is large, the eye will be relatively and temporarily insensitive to the more dimly lighted portions of the landscape. In addition to being annoying, this can create unsafe nighttime conditions for drivers and pedestrians.

That kind of distraction can be illustrated by a few examples. The effect of lights at 3Com Park on drivers on U.S. 101 is mainly on the peripheral vision. The lights at Bay Meadows Racetrack in San Mateo can be seen from as far away as the Hayward approaches to the San Mateo Bridge, where they are a major element in the direct field of view of motorists westbound on State Route 92. The distracting effect, requiring extra concentration by drivers to see the road ahead, continues for most of the trip across the bridge.

Night lighting could increase average illumination levels in spillover areas (areas beyond the playing field and the ballpark structure). Increased illumination can affect the suitability of sleeping areas, use of outdoor areas at natural light levels, and privacy. Such impacts need not involve direct glare effects. For some types of activities, such as sleeping, the degree of impact is probably related to the degree of change from the illumination levels to which people have become accustomed. Residential areas are generally considered to be the most sensitive receptors for light-producing activities, and the residential units at South Beach, particularly those facing the ballpark, would be among the most directly affected.

If the new ballpark lights are at an elevation of about 200 feet, such as is the case as at 3Com Park, they would be visible throughout much of the Mission Bay area. They could be distracting to motorists northbound on the elevated I-280 structure, and possibly to those on the King Street off-ramp that will be constructed by 2000, depending on the timing and the height of intervening development. However, current lighting design standards for new outdoor sports facilities generally do not involve lighting installations at such great heights, which could reduce the amount of glare spillover.

The lights could also be visible and annoying to residents on the upper portions of Potrero Hill, as ballpark lighting would appear brighter than the lights on the Bay Bridge beyond, and the headlights of approaching Bay Bridge traffic. Ballpark lights could be visible and annoying to residents of South Beach, the South of Market and downtown areas, wherever high-rise office buildings do not block the light path.

In addition, skyglow would result occasionally, because of the presence of fog, which occurs frequently in San Francisco during nighttime hours throughout the year, and particularly in summer during baseball season. Skyglow, resulting from reflectance and scattering by the fog, would be visible for several miles, although by its nature it would be less intense and have less direct spillover illumination than the glare under fog-free conditions.

Mitigation could consist of careful design and operation of the ballpark lights, with emphasis on minimum required intensities, and maximum direction of the light to the playing field, with minimum spillover beyond the ballpark structure. State-of-the-art lighting fixtures and design are available to achieve this. It would be possible for lights on the ballpark to be below 200 feet in height, using bulbs that would produce a more focused light than currently provided at 3Com Park. Furthermore, any structural shielding around the lighting sources would mitigate glare impacts.

The proposed ballpark, with 80-foot street walls and a total height of 130 feet, would cast new shadow on surrounding streets and sidewalks, and on the recently constructed South Beach Park. The park includes landscaping planted around the Ship Clerks Association building on Berry Street near Second Street; the usable space consists mostly of a lawn area north of the Ship Clerks building. Because it would be southwest of the new park, the proposed ballpark would cast shadow towards the park generally in the afternoon in fall, winter and spring. South Beach Park is under the jurisdiction of the San Francisco Redevelopment Agency, not the Recreation and Park Department, and, as such, is not subject to the provisions of City Planning Code Section 295 (the Sunlight Ordinance).

Because of its height and mass, the proposed ballpark could affect ground-level winds in its vicinity. Any potential effect on the park or on the sidewalks and streets surrounding the ballpark cannot yet be determined. It is likely that a wind tunnel study would be required as part of project-specific environmental review. Mitigation could include incorporating elements into the structure's design to minimize adverse wind impacts on surrounding areas.

Biological Resources

Because Alternative B assumes that relatively intense development would occur in the South Beach/China Basin subarea, including substantial assembly/entertainment/recreation use north of China Basin Channel, there are unlikely to be impacts to biological resources specific to this variant that are not impacts of Alternative B. The general impacts of development of the entire Project Area are addressed in Section V.H., Environmental Impacts, Biological Resources, and the impacts of this variant are covered in that analysis. While a ballpark would result in periods of very intense activity (during and immediately before and after games), there would be substantially longer periods of relative inactivity (off days, road trips and during the off-season, roughly November through March, with the exception of smaller concert events). If the ballpark were built on Pier 46B, there could be temporary construction-related impacts to the aquatic environment related to short-term changes in water quality. Demolition of any abandoned buildings to prepare for construction could have potential impacts to bat species; each of these impacts could occur under Alternative B without this variant.

Ballpark engineering and design details have not been completed to determine whether the development would require any Bay fill. If Bay fill were necessary, such as for the installation of new piles in the water, there could be short-term impacts on benthic organisms during construction, as for other pile-supported development assumed in Alternative B. There are unlikely to be long-term biological effects related to changes in flows and tidal flushing.

Geology, Seismicity and Soils

In a major earthquake, groundshaking would be "violent" at the ballpark site. The major impact of ballpark operations would be the exposure of a large number of additional people in the area to the effects of a potential earthquake, thus adding to the number of injuries and fatalities, and to the demand on emergency service providers, if an earthquake were to occur when a ballgame were in progress. Because baseball games that would be held at the proposed ballpark would have been held at 3Com Park, these impacts would, in essence, be relocated. One effect would be to expose larger crowds to seismic hazards, if the Giants' projections of increased attendance are realized. Should a major earthquake occur at a time when there were large crowds at the ballpark, the presence of a large crowd concentrated in one or two structures could cause more panic, with resulting pile-ups of people, trampling, etc., than would be expected in conventional buildings. It should be noted, however, that the moderate Loma Prieta earthquake of 1989 occurred just prior to the scheduled start of a World Series game at Candlestick Park, and induced no widespread panic.

Mitigation measures could include the range of structural and emergency-response measures provided in Section VI.I., Mitigation Measures, Geology, Soils and Seismicity (pp. 655-662), with special planning for crowd control at the ballpark. The proposed ballpark would require a comprehensive geotechnical evaluation prior to construction. Pile driving would likely be required to support the structure.

Hydrology and Water Quality

Because Alternative B assumes that relatively intense development would occur in the South Beach/China Basin subarea, including substantial assembly/entertainment/recreation use north of China Basin Channel, there are unlikely to be sewage or storm drainage impacts to hydrology and water quality specific to this variant that are not impacts of Alternative B. The general impacts of development of the entire Project Area are addressed in Section V.J., Environmental Impacts, Hydrology and Water Quality, and the impacts of this variant are covered in that analysis. While a ballpark would result in periods of very intense activity (during and immediately before and after games), there would be substantially longer periods of relative inactivity (off days, road trips and during the off-season, roughly November through March, with the exception of smaller concert events). Development of a ballpark would involve an associated improvement in infrastructure, as needed for sewage and storm drainage, as well as improved storage and secondary containment for chemicals. These improvements, generally required to meet building permit requirements, expand capacity needs or meet National Pollutant Discharge Elimination System (NPDES) permit requirements, would in turn reduce the potential for pollutants entering receiving waters (surface creeks and the Bay) and result in an overall improvement in surface water quality. Protection of surface water quality would indirectly provide protection of groundwater quality. The overall volume of stormwater runoff could decrease because, while the developed area would be similar to current conditions, the area of permeable surfaces (*i.e.*, areas not paved or built upon) would increase due to the presence of a baseball field. Specific drainage plans would have to be prepared, both to protect water quality and to ensure an adequate playing surface.

As mentioned under the discussion of Biological Resources, it is not known whether the ballpark would require Bay fill. The placement of fill would be expected to result in short-term localized effects to Bay water quality. There are unlikely to be long-term water quality effects related to changes in flows and tidal flushing.

Public Services and Utilities

As described in the analysis of public services in Section V.K, Environmental Impacts, Public Services and Utilities, improvements to water and, possibly, wastewater and storm drainage systems would be required on portions of Port property; site-specific improvements could be required as part of the development program for the proposed ballpark. Operation of the ballpark would relocate baseball games from 3Com Park. To the extent that the San Francisco Giants' projections of increased attendance are realized, there could be increased demands for police, fire and emergency medical services.

Energy

The proposed ballpark would relocate San Francisco Giants baseball games to the Project Area from 3Com Park. To the extent that increased attendance projected by the Giants would increase the amount of travel by persons who do not now attend baseball games (or attend fewer games than they would at the new ballpark), there would be increased consumption of energy for automobile and other vehicle fuels, some of which would be offset by an anticipated increase in the percentage of fans traveling by transit, carpool, bicycle and other non-single-occupant-vehicle modes. Some "new" baseball fans also could shift from other forms of entertainment, further diminishing the net increase in transportation energy consumption. The actual increase cannot be quantified.

Operation of the proposed ballpark would similarly not result in all-new energy consumption, as it would be used in place of 3Com Park for Giants baseball games. Additional events, such as concerts, might be "net new" events or might be held at the ballpark's music venue in lieu of other venues. The proposed ballpark would undoubtedly have different energy consumption characteristics than does 3Com Park. Again, the increase (or decrease) in energy consumption cannot be quantified.

Implementation of this variant would result in consumption of energy for construction, although not necessarily in excess of that assumed for Alternative B.

Hazards and Hazardous Materials

Because Alternative B assumes that relatively intense development would occur in the South Beach/China Basin subarea, including substantial assembly/entertainment/recreation use north of China Basin Channel, there are unlikely to be impacts related to hazards and hazardous materials specific to this variant that are not impacts of Alternative B; implementation of this variant would trigger the same requirements for soil investigation and remediation as would any development that could occur on the site. The general impacts of development of the entire Project Area are addressed in Section V.M., Environmental Impacts, Hazards and Hazardous Materials, and the impacts of this variant are covered in that analysis. Specific site contaminants identified in the review conducted for this EIR include underground storage tanks, some previously removed, at Pier 46B and possibly at the Caltrans site, soil and groundwater contamination with petroleum products, volatile and semivolatile organic compounds, and metals (soil only), hazardous building materials, including asbestos and lead, and previously identified abandoned wastes, including paint, oil, batteries, and grease. Impacts of potential exposure to contaminated soil within the Project Area would be avoided by adherence to provisions of San Francisco's Maher Ordinance (Article 20 of the San Francisco Public Works Code), which were summarized in Section IV.M., pp. 312-313. Maher Ordinance requirements would, by definition, mitigate potential impacts of contaminated fill at the development site(s).

Development of a ballpark would require demolition of existing buildings in the Project Area. If any unidentified hazardous building materials were to remain in existing buildings when renovation or demolition occurred, these hazardous materials could threaten worker health and safety. Furthermore, such materials could be inappropriately released to the environment as hazardous waste. Prior to renovation or demolition of each structure, the structure would be inspected by the project proponent for the presence of asbestos, PCBs, mercury or other hazardous materials. If found, these materials would be managed as required by law and according to federal or State guidelines.

Operation of the ballpark would not be expected to involve use of substantial amounts of hazardous materials or generation of hazardous wastes.

Historic Architectural Resources

No "significant" historical structures would be directly affected by construction of the proposed ballpark. As noted in Appendix I, Pier 46B, part of the ballpark site, was rated "C," of contextual importance by the Foundation for San Francisco's Architectural Heritage. As stated in the discussion of Transportation, Circulation and Parking for this variant, the bridges across China Basin Channel are both eligible for listing on the National Register of Historic Places, and the Lefty O'Doul (Third Street) Bridge is a City Landmark. Improvements that could be required for pedestrian access would be limited by these structures' historic status.

The proposed ballpark would be immediately across King Street (at Second Street) from the South End Historic District. Buildings in the district generally served originally as warehouses. They range in height up to six stories (about 80 feet), although many are one and two stories. Buildings are generally of brick, with large openings for movement of goods. Many have limited fenestration. The use of arches is common, particularly at the ground floor. The ballpark, with 80-foot street walls, would be taller than most nearby buildings. (The Townsend Building (former Southern Pacific Warehouse), at 126 King Street and 115-123 Townsend Street, is about 80 feet tall on its King Street side, across the street from the ballpark site.) Consistency with the historic district could be maximized by incorporation into the ballpark design of elements drawn from buildings in the district, including arches, deep-set windows, and a brick facade.

Archaeological Resources

As noted in Section V.O., Environmental Impacts, Archaeological Resources, portions of the WLUP Project Area, including the proposed ballpark site, have a high potential for containing significant historical archaeological resources in the buried cultural remains from the Gold Rush period through the early part of the 20th century. If substantial excavation were to occur as part of ballpark construction, there could be a high potential of encountering buried ship hulks, and warehouse, wharf and refuse deposits. Intact archaeological deposits from the Gold Rush period would generally be considered to be significant resources. Subsequent detailed analysis of potential archaeological resources at the proposed ballpark site would likely be required as part of project-specific environmental review; this analysis would determine the extent to which archaeological resources could be disturbed, and whether mitigation could be achieved through preservation or display of those resources. The EIR includes mitigation measures that outline a program for project-specific archaeological analysis.

Effects of Sports Arena

As noted at the start of the discussion of this variant, the Draft WLUP allows for a sports arena in the China Basin Mixed Use Opportunity Area, at the site currently proposed for the ballpark. No arena is currently proposed or foreseeable in this area. (An arena proposal at Rincon Hill, outside the WLUP Project Area, is currently undergoing environmental review. The effects of that proposal are generally examined in Variant 3, p. 705 of this chapter.)

If an arena were to be built at the ballpark site, effects would be the same or less substantial than those of the proposed ballpark. An arena would be smaller, and impacts related to the building's footprint, such as visual effects and effects related to biology, geology, hydrology, hazardous materials, architectural resources, archaeology, and shadow and wind would be similar or reduced. Effects related to the intensity of development (*i.e.,* traffic and related air quality and noise impacts) would be substantially reduced, with a capacity of approximately half that of the ballpark. An enclosed arena would also generate less crowd noise than an open ballpark. Traffic and related impacts, while less intense than at a ballpark, would occur more frequently, assuming more event-days at an arena that potentially could be used for cultural and other events in addition to sports.

VARIANT 2: PIER REMOVAL (ALTERNATIVE A)

This variant examines potential impacts of piers becoming vacant and closed off, and impacts of possible demolition of such piers. The WLUP proposes that interim use of piers for non-public-trust uses (such as general office or storage) be permitted pending future demand by land uses that are consistent with the trust. These interim uses are assumed to occur to the greatest extent under Alternative A. This variant to Alternative A assumes that new non-trust uses on piers, even on an interim basis, would not occur, for one or more of a variety of reasons: new non-trust uses could be prohibited by regulatory agencies such as the Bay Conservation and Development Commission or State Lands Commission, even on an interim basis; there could be a lack of market demand for new non-trust uses; piers could be intentionally held out of non-trust use in anticipation of future trust use; or certain piers might be in such a deteriorated condition that they could not accommodate even interim uses.

Given this potential scenario, piers assumed to sustain non-trust uses on an interim basis in Alternative A are assumed to be vacant in this variant, due to a lack of market demand for trust uses and the above-described rationale for precluding interim non-trust uses. This would lead to some piers that are now at least partially occupied, in many cases by non-trust uses, becoming vacant by 2010 as existing uses terminate for whatever reasons (*e.g.*, companies may relocate or go out of business). Piers that are currently in such disrepair that reuse is not economically feasible, and piers rated as having a poor ability to sustain their current loads in 2010, may also be vacant in this variant. Some of these vacant piers are likely to be demolished. Based on these criteria and current pier conditions, about a dozen piers would be vacant in 2010, mostly in the South Beach/China Basin subarea, but with at least some vacancies likely in each subarea except Fisherman's Wharf. (The locations of vacant piers would depend on the actual locations of future trust uses in Alternative A. It is likely that Piers 24, 34 and 64, which are currently condemned, would be among those removed.)

Under this variant, condemned piers and some of the piers that would become vacant would be demolished and removed from the Bay to avoid long-term maintenance and liability problems and to open up Bay views as open space resources; the others would remain, inaccessible to the public and unmaintained. The reasons for "mothballing" some piers could include 1) the lack of revenue-generating development under this variant may limit the Port's financial resources to the extent that it cannot fund pier demolition, and 2) some piers may be adjacent to long-term, trust-related uses, and as a result, there may be market demand for trust uses on the vacant piers after 2010.

Because many uses that would occur with Alternative A would occur with this variant (only interim non-trust uses would not occur), the overall magnitude and nature of development with this variant would be generally similar to Alternative A, except that some piers would become vacant and could be demolished. Mitigation measures applicable to Alternative A would generally be applicable to this variant, as the primary physical differences between this variant and Alternative A would be 1) somewhat less development over time with this variant, and 2) potentially increased, although temporary, construction-related impacts due to demolition of certain piers. These construction impacts, however, would generally be comparable in nature and degree to effects of dredging and pier replacement under Alternative A.

Public Plans, Policies and Permits

Piers that were kept vacant, either intentionally or as a result of market conditions, while not directly conflicting with the various regulations governing waterfront land use, would impede the Port's ability to further key objectives of its Strategic Plan, including supporting and enhancing a diversity of maritime industries; attracting residents and visitors to the waterfront; and earning sufficient revenue to remain self-supporting and to fund improvements, maintenance and prudent reserves.

Pier removal could require approval by the various agencies with jurisdiction over San Francisco Bay, including the Bay Conservation and Development Commission (BCDC), U.S. Army Corps of Engineers, Regional Water Quality Control Board, and others, potentially depending on site-specific conditions and whether any threatened or endangered species could be affected. Pier removal would comply with the spirit of BCDC limitations on Bay fill.

Land Use

Piers that are assumed to be removed or "mothballed" would fall primarily into two categories, piers that are planned for interim non-trust uses under Alternative A and piers that are currently in such disrepair (or likely to deteriorate into a condition of disrepair) that reuse is not (or will not be by 2010) economically feasible. Keeping rather than demolishing a vacant pier would allow for future reuse of that pier, were such reuse to become feasible after 2010. Therefore, demolition of piers would eliminate readily available space for potential future expansion of maritime activities or other trust use, were such demand to occur. Additionally, pier demolition would reduce potential opportunities for temporary or ceremonial berthing space.

Because not all of the piers that would be demolished or mothballed can be determined with certainty at this time, the precise changes in land use cannot be identified. (It is likely that Piers 24, 34, and 64, which are currently condemned, would be among those removed.) As many of the piers assumed to be vacant or removed would be within the South Beach/China Basin subarea, that would be the only subarea where effects could be substantial. Generally, there would be a decreased intensity of development, compared to Alternative A, and, to the extent that piers were demolished, comparatively more of the waterfront would be unencumbered by piers or pierhead structures. Under Alternative A, there would be an incremental decline in active land uses within this subarea, compared to existing conditions (see Section V.B., Environmental Impacts, Land Use, Table 25, p. 401); this variant would result in less land in active use compared to Alternative A. Many of the interim uses that would not occur on piers would be expected to occur elsewhere in the City, either on nearby seawall lots or at other locations, so that, Citywide, land use effects likely would be comparable to those under Alternative A.

Population, Housing and Employment

The assumed lack of interim non-trust uses on piers would reduce the additional long-term employment expected under the No Project Alternative and Alternative A. Most of the warehouse and light industrial activity and employment under Alternative A would not occur in the Project Area if the shed space on the piers were not available for this type of development. There might also be somewhat less office activity and employment in the Project Area than shown under Alternative A. The level of interim use activity assumed for the piers under this variant would resemble that of the No Project Alternative, i.e., more of the pier sheds are assumed to be vacant and under-utilized.

There would continue to be warehouse and light industrial space in existing buildings elsewhere in the City that could accommodate much of the activity that might occur as interim uses on the piers. Therefore, the prohibition of interim non-trust uses on piers would not have a significant impact on Citywide employment in those sectors. Should the vacant piers be demolished, there would be an increase in temporary employment (relative to Alternative A) for pier demolition.

Transportation, Circulation, and Parking

Several of the piers that would be removed or otherwise become vacant and inaccessible under this variant would likely be developed with relatively low-intensity uses under Alternative A (storage and warehouse) or would not be developed at all (because they are condemned). Therefore, trip generation under this variant, with no new interim non-trust uses assumed, would be incrementally less than with Alternative A. Some interim office use also would be likely on one or more of these piers under Alternative A, although the amount of office space would not likely be substantial, and the reduction in trips without this office use (under this variant) would be unlikely to result in a notable decline in trips, compared to Alternative A. At noted in Section V.D., Environmental Impacts, Transportation, 22 of the 24 intersections analyzed would operate at acceptable levels of service (LOS D or better) in the P.M. peak hour under Alternative A; as this variant would result in at least incrementally less traffic than under Alternative A, impacts could be incrementally less substantial than those of Alternative A, although levels of service would likely be generally the same as those under Alternative A. Transit demand and parking demand would also be reduced slightly compared to Alternative A. Demolition of piers could result in isolated, temporary effects of construction truck movement.

Noise

Piers that would become vacant under this variant would generate no operational noise. Warehousing and office use, which would be developed as interim uses under Alternative A, generate noise due to loading operations and traffic; those operational noise impacts would not occur on piers under this variant, although similar uses, and associated noise, could be developed on seawall lots or elsewhere in San Francisco. To the extent that interim uses that would be developed under Alternative A would be developed outside the study area with this variant, localized noise impacts would be less substantial than with Alternative A.

If condemned piers and some of the piers that become vacant are demolished, there would be one-time noise impacts related to pier demolition. The noise impacts could be felt at nearby businesses and residences, as well as at open space and public access areas. Uses that could be affected include existing office uses on seawall lots and proposed residential and retail uses in the Northeast Waterfront subarea; existing and planned open space and public access areas in the Ferry Building subarea; and existing and planned residential uses in the South Beach/China Basin subarea. If pier demolition is carried out during daytime hours, there would be fewer noise impacts to residential uses because fewer people would be at home during the day than at night.

Air Quality

Over the long term, this variant would result in incrementally fewer air quality impacts than Alternative A, because there would be less development overall than under Alternative A; as stated above, the difference would probably not be substantial. As with operational noise, interim non-trust uses could occur on seawall lots or elsewhere in San Francisco. To the extent that interim uses that would be developed under Alternative A would be developed outside the study area, localized air quality impacts (*i.e.,* intersection carbon monoxide concentrations) would be less substantial than with Alternative A. Citywide and regional air quality impacts would be similar to those under Alternative A.

If condemned piers and some of the piers that become vacant are demolished, there would be one-time air quality impacts related to pier demolition. The types of impacts that could occur include the generation of fugitive dust and exhaust emissions from demolition equipment.

Visual Quality and Urban Design

Piers that became vacant would be expected to deteriorate, potentially creating visual blight along the waterfront, similar to conditions at existing condemned piers. Conversely, removal of piers generally would serve to open up additional public vistas of the Bay. The location of a particular pier to be demolished would be the primary determinant of how substantial a change would occur to the visual environment. To the extent that pier removal would remove blighted structures, there could be a positive aesthetic impact. On the other hand, removal of visually remarkable, if deteriorated, structures could result in a loss of visual quality and continuity in the built environment.

Biological Resources

Piers that become vacant would be expected to deteriorate. However, pier structures would continue for some time to provide substrate for encrusting organisms such as barnacles, algae, sponges, and anemones, as well as deposition sites for herring eggs, and pier decking would also provide habitat value (e.g., places for hiding and feeding). Abandoned pier buildings would continue to serve as potential bat habitat. In this regard, effects of this variant, absent demolition, would be similar to those of Alternative A. This variant would include less maintenance or replacement of piers, compared to Alternative A, and would thus have marginally less effect on aquatic life due to dredging and associated construction.

If condemned piers and some of the piers that become vacant are demolished, there could be one-time temporary impacts to the aquatic environment related to short-term changes in water quality. Demolition of piers would have short-term impacts on aquatic life, including respiratory stress from increased turbidity related to underwater demolition, but high mortality is not expected to result from depressed oxygen levels, as described in Section V.H., Environmental Impacts, Biological Resources. These temporary effects would be comparable in nature and degree to effects of dredging and pier replacement under Alternative A. As further described in Section V.H, removal of piers would lead to some long-term decrease in substrate habitat as pier structures were removed. Demolition of any abandoned buildings to prepare for pier demolition could have potential impacts to bat species. Long-term effects of pier demolition under this variant would be generally similar to those of Alternative A, with incrementally more long-term reduction in substrate habitat. Removal of piers also could lead to less shading of the Bay, increased oxygen levels, and increased or changed tidal flushing, but it is not known whether these changes would occur or whether these would be associated benefits to aquatic habitat (because of the many factors involved).

Geology, Seismicity and Soils

Over the long term, this variant could result in an incremental beneficial impact (relative to Alternative A or Alternative B), in that fewer people would be exposed to the hazards of a major earthquake. The variant would in particular reduce the interim use of existing piers and/or structures that might collapse or suffer substantial damage in a major earthquake.

Hydrology and Water Quality

As Alternative A assumes the adaptive reuse of existing piers (and more limited, if any, infrastructure improvements), rather than new or redeveloped uses that would involve infrastructure improvements, this variant could avoid some of the water quality impacts that would be associated with the interim uses under Alternative A, whether vacant piers were demolished or remained vacant. Long-term effects under this variant would be similar to those under Alternative A, because only interim non-trust uses assumed under Alternative A would not occur. Water-dependent uses would occur as assumed under Alternative A, including small amounts of additional fill. Similar to Alternative A and the No Project Alternative, some deteriorated piers would remain in the Bay (unless demolished), with potential long-term water quality and sediment degradation associated with pier materials (such as wood, creosote, lead-based paint, etc.). Removal of piers from the Bay also could lead to increased or changed tidal flushing, but it is not known whether these changes would occur or whether there would be associated water quality benefits (because flows, tidal flushing, and Bay water quality depend on many factors).

If condemned piers and some of the piers that become vacant are removed, this variant could result in a beneficial impact (relative to all alternatives and to existing conditions), in that some paved surfaces and structures could be removed, resulting in a decrease in the amount of stormwater runoff. Demolition activities themselves could disturb Bay sediments, possibly resulting in lower dissolved oxygen, increased turbidity and salinity, increased concentration of suspended solids, and possible release of chemicals present in the sediments into the water column; these effects generally would be limited to the short term. Demolition of structures, particularly buildings located on piers extending into the Bay, could result in construction debris entering the Bay and affecting water quality. Building materials likely to be present in existing structures include lead-based paint, which if improperly handled during demolition could become chipped and enter the Bay and increase lead concentrations. In addition, demolition might require water-based construction activities, involving ships and barges handling construction equipment. Construction activities located on or adjacent to the Bay would result in increased potential for spills, construction materials or debris to enter the Bay and affect water quality. These temporary effects of demolition would be comparable in nature and degree to effects of dredging and pier replacement under Alternative A. Demolition of deteriorating piers could avoid potential water quality impacts of leaving deteriorated piers in place, including potential water quality degradation from broken sewer lines under piers that are damaged by waves and tidal action.

Public Utilities and Services

Removal (or non-use) of piers would incrementally reduce the level of development within the Project Area, compared to that assumed for Alternative A. To the extent that uses that would have occurred under Alternative A would shift to elsewhere in the City, this variant would not result in a substantial decrease in demand for public utilities and services, compared to Alternative A. Piers that are abandoned and not demolished would constitute a fire hazard: in the past, there have been several greater-alarm fires that consumed old pier sheds (although fires on finger piers (all but Pier 34, above) typically do not pose a great risk of involving other structures). Abandoned piers could also pose some risk of injury to trespassers, although this risk could be substantially mitigated by properly securing the piers and sheds. Portions of deteriorating piers can break loose, and through wave and tidal action, damage utility systems under pier decks. To the extent that improvements in public utility delivery systems would have been required under Alternative A for any of the piers to be abandoned under this variant, those improvements would not be made. This variant would preclude collection of revenue from interim uses under Alternative A, further straining the Port's budget for property maintenance. By definition, the abandoned piers would not be maintained. As noted in the description of this variant, a lack of revenue-generating uses could result in the Port's inability to fund demolition of abandoned piers.

Energy

To the extent that uses that would have occurred under Alternative A would shift to elsewhere in the City, this variant would not result in a substantial decrease in demand for energy, compared to Alternative A. Demolition of piers would require a short-term expenditure of energy, although without knowing whether piers would be demolished or "mothballed," the amount cannot be quantified.

Hazards and Hazardous Materials

If piers become vacant because interim uses assumed under Alternative A are foregone, there could be incrementally less storage and use of hazardous materials on those piers, compared to Alternative A. To the extent that there are hazardous building materials or other hazards in piers that would become vacant and inaccessible under this variant, this variant could result in incrementally less potential human exposure to those hazards, compared to Alternative A and to existing conditions.

If condemned piers and some of the piers that become vacant are demolished, impacts related to worker exposure to contamination would be similar to those described in Section V.M., Environmental Impacts, Hazards and Hazardous Materials, pp. 617-629. As noted in the discussions of Biological Resources and Hydrology, above, demolition of piers could result in short-term adverse impacts to marine life and water quality, but long-term impacts related to contamination are unlikely.

Demolition of the piers might also require demolition of existing buildings. If any unidentified hazardous building materials were to remain in existing buildings when demolition occurred, these hazardous materials could threaten worker health and safety. Furthermore, such materials could be inappropriately released to the environment as hazardous waste. Prior to demolition of each structure, the structure would be inspected by the Port for the presence of asbestos, PCBs, mercury or other hazardous materials. If found, these materials would be managed as required by law and according to federal or state guidelines.

Historic Architectural Resources and Archaeological Resources

Impacts to significant or potentially significant historic resources identified in Section IV.N., Environmental Setting, Historic Architectural Resources, and Appendix I, Historic Architectural Resources, would occur to the extent that these structures were to become vacant and deteriorate over time. None of the piers that are condemned are listed as important resources. Of three piers that received "poor" condition ratings from Port engineers in generalized evaluations of pier structures,[14] one (Pier 15) was rated "B," of major importance, by Heritage, and another (Pier 24 shed/bulkhead, since demolished) was rated 4 on a scale from a low of "0" to a high of "5."

Whether cultural resources, either in the form of structures or archaeological remains, would be adversely affected by pier removal would depend on the location of piers to be removed.

As stated in Section V.O., Environmental Impacts, Archaeological Resources, offshore portions of the Project Area have always been underwater during historic times and were not part of this historic fill area; no significant prehistoric resources would be expected in these areas, although buried ship hulks and other Gold Rush-era and later resources could exist, particularly in the northern and central portions of the Project Area from the Channel Street section of the South Beach/China Basin subarea north through the Fisherman's Wharf subarea. If submerged resources do exist, they could be affected by pier removal activity. Intact archaeological deposits from the Gold Rush period would generally be considered to be significant resources.

The following variants are discussed in less detail, as they involve potential development outside the WLUP Project Area.

VARIANT 3: RINCON HILL ARENA (ALL ALTERNATIVES)

This variant involves potential development of a sports and entertainment center at the base of Rincon Hill, on a site generally bounded by Spear, Harrison, Beale, and Folsom Streets and also including property on the north side of Folsom Street. The variant reflects an application filed with the San Francisco Department of City Planning on April 14, 1995. Four alternatives (called "concepts" here to avoid confusion with WLUP alternatives) are being analyzed in a separate environmental impact report/environmental impact statement being prepared jointly by the San Francisco Planning Department and the U.S. Postal Service, which owns a portion of the site. Two of the concepts would involve construction of a 21,000-seat sports and entertainment arena with between 250,000 and 450,000 sq. ft. of associated entertainment-oriented retail space. Each of these plans also would entail closure of Main Street between Folsom and Harrison Streets, and realignment of Folsom Street some 250 feet to the north at Beale Street. A third concept envisions construction of a 10,000-seat event center for musical and theatrical performances, a multi-screen cinema complex, and 300,000 sq. ft. of retail space. The fourth concept would entail buildout of the subject site under existing Master Plan and zoning designations, including the existing Rincon Hill Plan, resulting in construction of approximately 1,000 residential units and about 168,000 sq. ft. of retail space. Each of the four concepts would include parking, ranging from 1,140 spaces with the residential-retail concept (#4) to 3,000 spaces with event center-residential concept (#3). Because this project has a filed application, it is considered a variant to all of the alternatives.

Although the Rincon Hill project would be developed outside of the WLUP Project Area, it is being considered as a variant to the EIR Alternatives because (1) the Rincon Hill site is close enough to the Project Area that its development would contribute to some of the cumulative impacts of Project Area development (particularly in the South Beach/China Basin and Ferry Building subareas) and (2) the development of the Rincon Hill project could affect the types and extent of certain uses developed within the Project Area.

The following discussion of the impacts of the Rincon Hill project variant is based in part on the analysis prepared for the Rincon Hill arena EIR/EIS. Because the Rincon Hill project would be outside the WLUP Project Area, the following discussion does not include impacts to visual quality and urban design, biological resources, hydrology and water quality, hazards and hazardous materials, historic architectural resources, or archaeological resources (which are considered to be specific to that project site). The focus here is on changes in the cumulative context in which Waterfront Plan development would occur; that is, effects related to employment, transportation, noise and air quality. Site-specific issues will be discussed in the EIR/EIS for the Rincon Hill project.

As stated in Section V.C., Environmental Impacts, Population, Employment and Housing, most employment forecast to occur under the various WLUP alternatives would not be new to San Francisco, but would result from a shift in employment from other locations. The Rincon Hill project, as a relatively specialized assembly/entertainment use, would result in increased employment that would likely be new to San Francisco. In this sense, it would most clearly follow the assumptions for underlying Alternative B, which assumes that successful regional attractions are assumed to be developed in the WLUP Project Area; under this variant, the Rincon Hill project would be such a regional attraction, which might or might not preclude an assembly/entertainment complex of similar scale within the WLUP Project Area and, if it did not, would result in increased employment in assembly/entertainment uses beyond that considered in Alternative B. As with the proposed ballpark variant, the Rincon Hill project could induce patronage of restaurants and shops in San Francisco rather than elsewhere, potentially resulting in growth-inducing impacts due to this increased demand. Those impacts cannot be quantified at this time. To the extent that the Rincon Hill project would result in a shift in activity from another regional facility, projected employment would not be net new employment within the Bay Area, but would be net new employment in San Francisco. Construction of the Rincon Hill project would add to Citywide and regional employment on a temporary basis during the planning, design and construction period.

The proposed Rincon Hill project would generate between 1,200 and 2,500 P.M. peak-hour vehicle trips, depending on the concept selected for development. If a development concept including a sports and entertainment arena were pursued, it would be expected that the majority of events would be scheduled at night and on weekends, reducing the potential impact on P.M. peak-hour traffic. Nevertheless, traffic generated by this variant might result in unacceptable levels of service at nearby intersections, including intersections within the EIR study area, depending on the concept selected and the scheduling of events, if applicable. For example, in 2010 under Alternative A, the intersections of Embarcadero/Folsom Street and Embarcadero/Bryant Street would be at LOS C and LOS D, respectively. Under Alternative B, those intersections would be at LOS D and LOS F, respectively. Preliminary results of Rincon Hill project transportation analyses show Embarcadero/Bryant at LOS E or F for most Rincon Hill alternatives, under WLUP No Project assumptions (ABAG forecast of regional growth). Resulting congestion would be worse yet under Alternative A or B.

If the Rincon Hill project were undertaken, particularly as a sports and entertainment arena, and the proposed ballpark, analyzed under Variant 1 in this chapter, were also developed, there could be instances in which events would occur in both venues at the same time. In such instances, there could be substantial congestion at local intersections and on the I-80, U.S. 101, and I-280 freeway ramps. Depending on the timing of the events, congestion would likely be worse than described in Section V.D, Transportation, for Alternative B. Mitigation for these impacts could take the form of coordinating schedules of events in the two facilities to avoid overlapping departure of fans from both venues. The EIRs for the proposed China Basin ballpark and Rincon Hill project will analyze potential transportation impacts in considerable detail.

Cumulative air quality and impacts related to traffic generated by this variant would depend in large part on whether the Rincon Hill project were to result in increased regional traffic, or whether it would simply relocate events from other venues in the region, with a concomitant relocation of that traffic. To the extent that "new" events would occur at the Rincon Hill project site, there could be substantial emissions of vehicle-related pollutants. Local intersection carbon monoxide (CO) levels would be unlikely to exceed the State's one-hour standard, but the eight-hour standard could potentially be exceeded, particularly for high-attendance events held during he winter, which is the season of worst-case meteorology that produces the highest local CO evels.

Noise impacts would generally be locally felt due to increased traffic. For concepts including igh-attendance events at an arena or event center, post-event traffic at night would be most likely to result in perceptible noise effects. Because all concepts that would include a sports or performance venue envision an indoor facility, noise from events themselves would not likely be perceptible.

Project-specific impacts related to geology, seismicity and soils relative to the Rincon Hill project would be reviewed in that project-specific EIR/EIS. The Rincon Hill project would contribute to cumulative exposure of persons to earthquake-related hazards. This would be particularly true for those concepts including an arena or event center, when a relatively large concentration of people would be affected if an earthquake were to occur when events were in progress. To the extent that events that would be held at the arena or event center would have been held elsewhere in the Bay Area, most likely at an older facility, these impacts could, in essence, be relocated, and the severity would depend, in part, on the location of an earthquake. In conjunction with construction of a ballpark at South Beach/China Basin (Variant 1 of this EIR), implementation of this variant could potentially expose a larger concentration of people to seismic hazards in Downtown & Vicinity of San Francisco, if an earthquake were to occur when events were in progress.

VARIANT 4: MISSION BAY REVISIONS (ALL ALTERNATIVES)

This variant involves potential revisions to the approved Mission Bay development program that would occur on the portion of the Mission Bay area north of China Basin Channel, adjacent to the WLUP project area. As with the Rincon Hill project, the Mission Bay changes would occur outside the WLUP project area. Also as is the case with the Rincon Hill project, the proposed Mission Bay revisions are considered as a variant to the EIR Alternatives due to the physical proximity of the potential land use changes to the Project Area. As with the Rincon Hill project, this analysis focuses on changes in the cumulative context in which Waterfront Plan development would occur; that is, effects related to employment, transportation, noise and air quality. Site-specific issues would be discussed in the course of subsequent environmental documentation for the Mission Bay changes.

The Mission Bay revisions would eliminate about 4.8 million sq. ft. of office space approved for the area generally bounded by Townsend, Third, Berry and Sixth Streets and, in its place construct about 2,000 housing units and up to 350,000 sq. ft. of retail space consisting of "urban entertainment" retail space (possibly including a multi-plex cinema), and about 50,000 sq. ft. of "neighborhood" retail space. The revisions assume that the CalTrain station would remain at Fourth and Townsend Streets until at least 2006, and also assume that no development would occur in the area bounded by Townsend, Sixth, Berry, and Seventh Streets, currently occupied by railroad tracks associated with the CalTrain station.

Because the EIR transportation analysis was based on Association of Bay Area Government projections that included only partial buildout of the Mission Bay office space that would be replaced under this variant, this variant, assuming complete buildout of the new proposal, would result in greater trip generation than was assumed in Section V.D., Environmental Impacts, Transportation. The net change for the traffic analysis zone in which the Mission Bay revisions would occur would be an increase of approximately 205 P.M. peak-hour trips (+390 inbound; -185 outbound), which would not in itself measurably affect intersection levels of service. The directional split would be different than was assumed under the prior Mission Bay plan, since those previously assumed trips would have been mostly outbound from the formerly proposed Mission Bay office development in the P.M. peak hour and, under the Mission Bay revisions, a substantial number of trips would be inbound to the newly proposed residential units. Correspondingly, demand for P.M. peak-hour Muni service from Downtown to the newly proposed Mission Bay residential units would be marginally increased, compared to demand anticipated with the previously proposed office development. This shift from primarily employment-generating uses to primarily residential uses would not be expected to substantially affect regional roadways and transit, as it would incrementally reduce peak-hour peak-direction commuting (out of San Francisco) in favor of "reverse commute" trips.

In conjunction with construction of the proposed China Basin ballpark (Variant 1), the Mission Bay revisions would result in a cumulative increase in local traffic volumes. Table 56 compares intersection operations as reported in Section V.D to operations at those intersections with implementation of the Mission Bay revisions plus the ballpark variant. As with the ballpark-only analysis, this intersection analysis provides only a preliminary estimation of the approximate magnitude of impact of ballpark-generated traffic.

As shown, of the seven intersections analyzed, the Mission Bay revisions, along with ballpark traffic, could degrade the P.M. peak-hour level of service at one intersection to poor (from LOS D to LOS D/E), would contribute to degraded (LOS E or F) conditions, but would not affect level of service, at two intersections, and would increase traffic, but not result in unacceptable levels of service, at four intersections. (Level of service impacts would be the same as for the ballpark alone; see Table 55, p. 679.) As with the ballpark alone, traffic conditions in the hour immediately preceding a baseball game (6:30 P.M. to 7:30 P.M. for a weekday night game) could be worse than the conditions described above.

TABLE 56: P.M. PEAK HOUR INTERSECTION LEVEL OF SERVICE (LOS) COMPARISON - MISSION BAY VARIANT PLUS BALLPARK VARIANT TO ALTERNATIVE B (YEAR 2010)

Intersection	1993 Existing	2010 Alt. B	2010 Alt. B + Mis. Bay Rev. + Ballpark	
	LOS	LOS	Vehicles Added/a/	LOS
15. Embarcadero / Harrison Street	E	B	55 SB	D or better
16. Embarcadero / Bryant Street	F	F	55 SB	F
17. Embarcadero / Brannan Street	F	D	150 SB	D/E
18. Third Street / King Street	F	E	90 EB	E
19. Fourth Street / King Street	C	B	410 SB& 225 EB	D or better
20. Third Street / 16th Street	B	B	205 NB	D or better
21. Third Street / Mariposa Street	B	B	205 NB	D or better

/a/ Number of vehicles added due to revised Mission Bay traffic plus ballpark traffic and direction of travel (*e.g.*, 100 SB indicates 100 added vehicles in the southbound direction).

SOURCE: Robert L. Harrison Transportation Planning; Korve Engineering; Environmental Science Associates

Because the changes in trip generation in the traffic zone containing the Mission Bay revisions would be relatively minor, no substantive changes in traffic-generated air quality or noise impacts would be expected.

NOTES - Variants to the Alternatives

1 For comparison of the magnitude of development, the 12.5-acre ballpark site consists of approximately 550,000 sq. ft. However, a use such as a ballpark is not typically measured in square feet, which is a method of measurement employed in analyzing overall density and traffic impacts, for example.

2 It is assumed that 3Com Park would remain as a football stadium, so that it would not be redeveloped to a new employment-generating use. The City is investigating redevelopment of the Candlestick Point area, potentially including commercial development that could help support construction of a new football stadium. However, the

analysis of the impacts of such a plan is speculative at this time; such a plan would be subject to its own environmental review.

3 The Giants have in recent years played a higher percentage of weekday games in the afternoon to take advantage of weather conditions. Because of traffic and parking considerations at the China Basin site, the team has indicated it will follow a more standard schedule, with weekday day games typically occurring only on the last day of a opposing team's visit to San Francisco, when travel plans frequently necessitate an earlier departure.

4 Recent newspaper reports have indicated that day games, particularly on weekdays, could be scheduled as early as 12:00 noon to lessen the overlap between post-game traffic and the afternoon commute period.

5 Robert L. Harrison Transportation Planning, Memorandum to Kari Kilstrom, Port of San Francisco, "Trip Generation for the China Basin Ballpark," December 27, 1995; Robert L. Harrison Transportation Planning, Memorandum to Jerry Keyser, Keyser Marston Associates, "Parking Requirements for the China Basin Ballpark," December 13, 1995; and Robert L. Harrison, personal communication, January 2, 1996.

6 San Francisco County Transportation Authority, Strategic Analysis Report 96-1, "China Basin Ballpark Transportation Issues," Final Draft, February 22, 1996. This report is available for review at the Planning Department, 1660 Mission Street.

7 Harrison, op. cit.

8 Calculation: 42,000 x 75% auto trips ÷ 2.7 persons per vehicle.

9 San Francisco County Transportation Authority, op. cit.

10 Harrison, op. cit.

11 Harrison, op. cit.

12 San Francisco County Transportation Authority, op. cit.

13 Mission Bay EIR, Case No. 86.505EMTZ, Final EIR certified August 23, 1990; Appendix M, Sports Facilities, p. XIV.M.1.

14 Port of San Francisco, interdepartmental memoranda: Cliff Jarrard to Kari Kilstrom, August 31, 1994, and Jim Read to Kari Kilstrom, September 20, 1994.

VIII. SIGNIFICANT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED IF THE PROPOSED PROJECT IS IMPLEMENTED

In accordance with Section 21067 of the California Environmental Quality Act (CEQA), and with Sections 15040, 15081 and 15082 of the State CEQA Guidelines, the purpose of this chapter is to identify impacts that could not be eliminated or reduced to an insignificant level by mitigation measures included as part of the proposed project, or by other mitigation measures that could be implemented, as described in Chapter VI, Mitigation Measures, pp. 644-671. A listing of the specific impacts that are not mitigated will be part of the decision-making documents.

The findings of significant impacts are subject to final determination by the City Planning Commission as part of its certification process for the EIR. This chapter in the Final EIR will be revised, if necessary, to reflect the City Planning Commission's findings. If all mitigation measures are adopted, the following unavoidable significant effects would or could occur:

LAND USE

Land uses in the Project Area would change under Alternative A and, especially, Alternative B. Conflicts could occur between industrial uses (maritime and non-maritime), and sensitive receptors such as residential, commercial and open space uses, particularly in the South Beach subarea and in residential areas near the Southern Waterfront subarea, because industrial uses generate noise, dust, night lighting and truck traffic. Although mitigation measures are available to minimize the effects of various land use conflicts, there is no assurance that sufficient mitigations would be available for or applied to specific or cumulative future development to completely avoid potential significant impacts.

TRANSPORTATION

Alternative B would contribute to cumulative increases in traffic congestion on approaches to the Bay Bridge, and would increase incident conditions that result in backups and congested conditions on city streets. General mitigations to reduce vehicular traffic (e.g., Transportation Mitigations 5 and 7) could potentially reduce or avoid the impact, but avoidance cannot be assured.

Under Alternative B, four intersections would unavoidably deteriorate to an unacceptable level of service in the weekday P.M. peak: The Embarcadero at Bay, Sansome, and Bryant Streets; and the intersection of Third and King Streets. Project-generated transit trips would not cause significant impacts to regional transit operators. Under Alternative B Muni service from the waterfront across the Northwest screenline would deteriorate to an unacceptable level of service if recent shortfalls in delivered seating capacity relative to scheduled capacity were to continue, and specific lines could experience increased crowding even if scheduled capacity is able to be provided. Under Alternatives A and B, demand in the Project Area would exceed the planned capacity of Muni F-Line service between the Ferry Building and Fisherman's Wharf. Project-generated increases in pedestrian volumes could cause traffic and safety conflicts along The Embarcadero, particularly under Alternative B.

AIR QUALITY

Total emissions that would be generated under Alternative A would exceed the Bay Area Air Quality Management District (BAAQMD) significant impact threshold for projects of 150 pounds per day for NO_X and PM_{10}; under Alternative B, the thresholds for HC, NO_X, SO_X, and PM_{10} would be exceeded. Under all three alternatives, total emissions of NO_X and SO_X would exceed one percent of San Francisco County emissions, the significant impact threshold for projects. The BAAQMD significance thresholds are intended to be applied to individual projects. A land use plan covering a wide area, such as the WLUP, usually involves buildout of a number of individual projects and increases in activity levels in a variety of locations. Thus, it is not surprising that, taken together, the cumulative growth that could occur under the WLUP would exceed significance thresholds designed for individual projects. BAAQMD is considering, but has not adopted, draft CEQA guidelines that would relate specifically to local plans. Preliminary analysis indicates aspects of the project (the potential for an increase in regional vehicle trips proportionately higher than population increases, and the potential for exposure of some residential uses to three existing sources of toxic air contaminants) could also generate significant air quality impacts based on the draft BAAQMD CEQA guidelines.

GEOLOGY, SOILS AND SEISMICITY

Under Alternative A, and especially under Alternative B, increased numbers of people would be present in the Project Area, exposing more people to existing seismic hazards. Alternative A involves greater resident population and more occupancy of older, seismically hazardous buildings than Alternative B. Alternative B involves much greater visitor and employee population but safer, new buildings.

HYDROLOGY AND WATER QUALITY

Expansion of existing, ongoing maintenance dredging would contribute to regional water quality impacts associated with disposal of dredged material, currently being studied by the U.S. Army Corps of Engineers as part of a long term management strategy for Bay dredging.

VARIANTS

The China Basin ballpark and Rincon Hill Arena will undergo separate, project-specific environmental reviews. At this time, there is insufficient information to conclusively determine whether the two projects, separately or together, would generate unavoidable adverse impacts. However, it is likely that the projects would both contribute significantly to local and regional cumulative increases in traffic congestion, and exceed BAAQMD significance thresholds for hydrocarbons, particulates and nitrogen oxides at peak attendance times. Noise and light/glare impacts can be mitigated but at this time it is not known whether mitigation measures would be included that would avoid significant impacts.

IX. SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

Implementation of the Waterfront Land Use Plan would increase the intensity of land uses and activity along the waterfront, especially under Alternative B. Construction materials and energy used for the new development would involve use of some non-renewable resources, but would not be especially wasteful of resources. Increased development would result in increases in travel demand and associated vehicle trips, which would contribute to potential future cumulative air quality impacts. These impacts would not be significant because the project would not substantially contribute to cumulative growth and development.

X. ALTERNATIVES CONSIDERED

The CEQA *Guidelines* require EIRs to describe and evaluate a range of reasonable alternatives to a project, or to the location of a project, which would feasibly attain most of the basic project objectives and avoid or substantially lessen significant project impacts. The *Guidelines* set forth the following criteria for selecting alternatives:

1. ". . . [T]he discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly." (§15126[d][1])

2. "The range of potential alternatives shall include those that could feasibly accomplish most of the basic purposes of the project and could avoid or substantially lessen one or more of the significant effects." (§15126[d][2])

3. "The specific alternative of "no project" shall also be evaluated along with its impact." (§15126[d][4])

4. "The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could meet most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making . . . . Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries. . .and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site. . ."(§15126[d][5])

Three alternatives (and four variants to the alternatives) were determined to meet these criteria, and are presented and analyzed in detail in Chapters III through VII of this EIR. The No Project Alternative, although assuming absence of a Waterfront Land Use Plan (WLUP), was analyzed in accordance with criterion (3) noted above. As discussed in Chapter III, Project Description, p. 47, Alternatives A and B were developed in an attempt to cover the large number of potential "future waterfront" outcomes that could occur under the WLUP. The alternatives also vary the mix and location of potential uses to highlight potential adverse effects on the environment that could result from the policies contained in the WLUP. It is the intent of this EIR that the alternatives and variants described satisfy CEQA requirements for a reasonable range of alternatives focusing on reducing or eliminating physical environmental impacts.

The Burton Act directs that Port property must be used to promote a number of public trust uses and objectives. Because the range of permitted uses is relatively narrow, and the circumstances under which property can be declared surplus and thus free of the public trust use restrictions are extremely limited, this EIR does not evaluate alternative land use programs such as one dominated by residential, general industrial or commercial uses. In addition, as explained further in this chapter, this EIR does not analyze an alternative consisting only of maritime uses.

The No Project Alternative and Alternatives A and B were selected for analysis after consideration of a variety of other alternatives. This chapter discusses alternatives that were rejected prior to detailed analysis because they did not meet the selection criteria.

NO PROJECT ALTERNATIVE (NO DEVELOPMENT)

This alternative would assume that there is no adoption of the WLUP, and that no development occurs within the Project Area. It would require a prohibition on further development or change within the Project Area, and would be inconsistent with State law that requires the Port to "substantially improve" the property (Burton Act, Section 22). Because development in most parts of the Project Area could occur under existing plans and zoning, even without adoption of the WLUP, this alternative is an artificial construct. If it could be implemented, this Alternative would resemble the Environmental Setting presented in Chapter IV. This EIR compares the effects of all analyzed Alternatives to the existing setting in Chapter V. Separate analysis of a 'no development/ no change" scenario is not warranted.

LESS-INTENSIVE DEVELOPMENT ALTERNATIVE

This alternative would assume that the WLUP is revised to exclude uses that could attract large numbers of people to the waterfront. The intent of this alternative would be to avoid or reduce mpacts that are related to people-intensive uses --impacts such as congestion caused by dditional traffic at local intersections, the contribution to additional traffic congestion at egional screenlines, air quality impacts related to additional trips and congestion, and the xposure of people to seismic hazards. The uses that are proposed under the Draft WLUP, but hat would not be allowed under this alternative, include Assembly/Entertainment/Recreation ses, among others. Maritime uses that generate large numbers of truck trips might also be xcluded.

The mitigation measures identified in Chapter VI of this EIR, if adopted, would commit the Port to avoiding or mitigating impacts related to high-intensity uses. For example, the transportation mitigation measures require promotion of transit use. Seismic mitigation measures include a number of requirements for building design and construction so that earthquake-related hazards are minimized. Nevertheless, some impacts of the WLUP as a whole, such as air quality impacts, might not be mitigated to less-than-significant levels.

The uses assumed for this EIR's No Project Alternative and Alternative A are similar to the uses that would be allowed under a less-intensive development alternative. The EIR's No Project Alternative, which does not assume an increase in maritime activity or development of major people-attracting uses, would result in fewer impacts (for some environmental issue areas) than would Alternative B. The analysis of Alternative A, which does not assume a substantial increase in maritime activity or development of a number of major people-attracting uses, also shows that it would result in fewer impacts (for some environmental issue areas) than would Alternative B. For example, levels of service at two of the intersections that would be at LOS E or F in Alternative B would be at LOS D in Alternative A. In other areas, Alternative A would result in impacts that might not occur under Alternative B, because the emphasis on interim uses means that improvements to piers and infrastructure that could reduce or avoid impacts would not occur. For example, there could be seismic hazard impacts under Alternative A if interim uses do not include seismic upgrades.

Although Alternatives A and B are both based on the Draft WLUP, which allows development of people-attracting uses, Alternative A is based partly on the assumption that the Port does not propose (or is not able to achieve) the changes to policies and regulations needed to fully implement the WLUP. In that sense, the Port or other decision-makers with land use authority in the Project Area could choose to implement the WLUP in such a way that the development that occurs is more like what was assumed for Alternative A (and in that sense, the result would be similar to a less-intensive development alternative).

An alternative that specifically revises the WLUP to exclude intensive uses was not analyzed in the EIR because it does not appear to "feasibly attain most of the basic objectives of the project." One such objective is to maximize the attainment of public trust objectives, which include (among others) water-borne commerce and uses that support or stimulate such commerce; water-related recreation; and promotion of public enjoyment of trust property. High-intensity uses such as Assembly/Entertainment/Recreation are considered to be basic to the WLUP, not only because such uses promote public use and enjoyment of the Bay, but also because they generate revenues that can be used to (1) maintain Port property and (2) help attract and retain maritime activity. Maritime activity at the Port not only meets public trust objectives but also is consistent with the policies of the BCDC, as reflected in the *Seaport Plan* and port-priority use designations. Proposition H requires that the WLUP be reviewed every five years. At those times, any high-intensity use could be evaluated to inform decision-makers as to whether the benefits associated with achieving project or public trust objectives would outweigh adverse environmental impacts.

"ALL-MARITIME" ALTERNATIVE

This alternative would assume that the WLUP is revised to allow only those uses that are strictly water-dependent (cargo shipping, fishing, ship repair, ferries, excursions, maritime support, and cruise terminal). Water-oriented commercial recreation and non-water-oriented uses (such as general retail or general warehousing uses on seawall lots) would not be allowed. Areas not needed for water-dependent uses would be devoted to open space and/or resource restoration.

This EIR examines current and recent regional planning efforts related to cargo shipping and port-priority use designations (the *Seaport Plan* update) and commuter ferry activity (the MTC *Regional Ferry Plan* and Ferry Terminal Conceptual Design). EIR Alternative B assumes the maximum cargo shipping activity that could be accommodated on all piers that would retain port-priority designation in the updated *Seaport Plan*. These maximum activity levels are consistent with the pier capabilities estimated for the *Seaport Plan* update. By assuming the maximum level of cargo shipping by 2010, Alternative B probably goes beyond what is realistically possible for the Port Project Area, given the limitations specific to the Port of San Francisco (described in Appendix D of this EIR).

All of the EIR Alternatives assume the forecast of substantial growth in commuter ferry activity developed for the *Regional Ferry Plan*, and updated as part of the Ferry Terminal Conceptual Design. EIR Alternative B also assumes an increase in excursion boat activity, and the development of additional excursion boat terminals. EIR Alternative B assumes more than a doubling of cruise ship activity, resulting from favorable changes in the cabotage laws. The WLUP in general foresees additional water-dependent uses, involving (in addition to the types of changes just mentioned) a consolidation and strengthening of fishing industry activities in the Fisherman's Wharf subarea, and additional water taxi activity. In essence, then, Alternative B represents the "maximum water-dependent use" scenario. An alternative that went beyond this level of development would not likely be feasible, and could involve additional impacts.

For example, the WLUP envisions continuation of the trend toward consolidation of cargo shipping uses in the Southern Waterfront subarea (and to some extent, the southern portion of the South Beach/ China Basin subarea). Revising the WLUP to allow (and promote) cargo shipping uses in the other subareas could result in environmental impacts beyond those analyzed in this EIR. Such impacts could include (among others) conflicts with nearby residential uses (for example, in South Beach and the Northeast Waterfront subarea), and potential conflicts between pedestrians and trucks.

In addition to the maximum water-dependent use scenario, Alternative B assumes substantial development of non-water-dependent uses. An "all-maritime" alternative could theoretically assume that the water-dependent uses assumed in Alternative B would be developed, but that the non-water-dependent uses assumed in Alternative B would not be developed. Theoretically, the unused piers could be removed or left to deteriorate, and the seawall lots could be used for support services, left in their present uses or converted to open space. In some ways, such an alternative could result in fewer impacts than Alternative B, as uses that draw large numbers of people to the waterfront (with concomitant traffic, air quality, and seismic hazard impacts) would not be developed. However, it is not clear that such an alternative would have fewer impacts than Alternative A (in that Alternative A emphasizes adaptive reuse of existing structures and assumes a much lower level of maritime activity than Alternative B). In addition, such an alternative in itself could result in impacts, including removal of visually important and historically significant resources (pierhead and bulkhead buildings), as discussed in Chapter VII, Variants (Variant 2, Pier Removal), pp. 696-705.

Due to the surplus of facilities available in the Bay Area for water-dependent activities, the limited market demand for such property, and the fact that most maritime operations at the Port require major infrastructure improvements that those industries cannot alone afford to bear, an alternative that permitted only water-dependent maritime uses would render a large proportion of Port property vacant and incapable of generating revenue needed to promote maritime commerce, including ongoing maintenance of trust resources, payment of debts incurred for major container terminal improvements, and subsidization of existing maritime industries. The vacant, unmaintained property would be unavailable for safe enjoyment and use by the public. Furthermore, other public trust objectives, such as public recreation, also require considerable Port investment which can only be made if revenue-generating uses coexist on Port property. Consequently, a variant to Alternative B comparable to Variant 2 to Alternative A (i.e., maximum maritime development with no non-maritime uses, resulting in vacant land and piers and possible pier demolition) was not considered feasible because intensive development of property surplus to water-dependent needs would be necessary to generate the bonding capacity and revenue sources to enable attainment of maximum maritime activities. This alternative would also be inconsistent with the San Francisco General (Master) Plan and BCDC plans and policies that call for non-water-dependent uses (e.g., commercial recreation) at various locations.

The WLUP process was organized in three phases, with Phase I dedicated specifically to an analysis of the existing and future needs of the Port's maritime and water-dependent industries. Conducted in 1992, Phase I included interviews with industry representatives, preparation of reports for each maritime industry, and public hearings to review and debate the research and information compiled prior to the Advisory Board's recommendations regarding maritime designations of Port property. In addition, various plans and reports published independent from the WLUP process and recent developments which have occurred since 1992 corroborate or are consistent with the amount or locations of Port property designated for maritime uses in the WLUP.

For the various reasons outlined above, a maritime-only alternative was considered infeasible, and inconsistent with the Port's obligations under the public trust land grant. A detailed discussion of these and other issues which support the WLUP maritime designations and describe reasons why it is infeasible to reserve all Port property for maritime use is contained in a memorandum from the Port (dated May 13, 1996) which is available for public review in the EIR files at the San Francisco Planning Department.

ALTERNATIVE LOCATION

As the proposed WLUP is specific to a particular location, it could not, as a whole, be carried out anywhere else. In addition, Proposition H includes a specific definition of the property for which waterfront land use plan must be prepared.

or uses that require the proximity of water and the facilities of a port, the only alternative ocations would be the ports or waterfronts of other jurisdictions. The Port of San Francisco oes not own such property, nor is it likely that the Port could "reasonably acquire, control, or therwise have access to" such property (given the ownership of ports by other jurisdictions and e requirement for a transfer of the public trust grant from the State). Therefore, WLUP ternatives involving alternative locations for water-dependent uses are considered infeasible nd are not analyzed in this EIR (in accordance with CEQA Guidelines Section 15126(d)(5)(B)). o the extent that the water-dependent uses envisioned do not have to be developed in San

Francisco, the developers or operators of such uses could choose to locate elsewhere, and the impacts of those uses would shift to those other locations. An alternative that required the WLUP to actively discourage such uses (so that they would be more likely to locate elsewhere) is considered infeasible because it would be in conflict with the Port's obligations under the public trust.

An alternative that involved development of non-water-dependent uses in other locations was not evaluated because (1) such an alternative would not be likely to reduce impacts substantially (as many of the impacts identified would be related to development on piers) and (2) the other locations would not be within the control of the Port of San Francisco.

An alternative that involved revising the WLUP such that allowed uses were moved to other locations within the Project Area would most likely shift impacts from one location to another within the Project Area (based on what is known for this planning-level environmental review). The mitigation measures presented in Chapter VI of this report, as well as subsequent, project-specific environmental review, would require the Port to address impacts that could occur at specific sites prior to project development.

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LASCO International Network

Julia Kavanagh
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The Kinsley Group

Nancy Kitz

Shirley Kohlwes
Red and White Fleet

James Krotozyner

Marlene Laffen

Robert Langer
C-MANC

5) CITIZEN'S GROUPS/INDIVIDUALS (continued)

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Marty Beth Lefebvre

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Carrie G. Ludwig

Terry MaCrae
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Stewart Morton
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P. Marhamat

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5) CITIZEN'S GROUPS/INDIVIDUALS (continued)

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Ann McClain

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5) CITIZEN'S GROUPS/INDIVIDUALS (continued)

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Rosalie Ross

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Mike Rudolph

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5) CITIZEN'S GROUPS/INDIVIDUALS (continued)

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5) CITIZEN'S GROUPS/INDIVIDUALS (continued)

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5) CITIZEN'S GROUPS/INDIVIDUALS (continued)

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Waterfront Plan Coordinator: Diane Oshima

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    Robert L. Harrison

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San Francisco Thermal
    Richard Mayer, President

XIII. APPENDICES

A. NOTICE OF PREPARATION
B. SEAWALL LOT NUMBERS AND ASSESSOR'S BLOCK AND LOT NUMBERS
C. WATERFRONT LAND USE PLAN LAND USES
D. ASSUMPTIONS USED IN DEVELOPMENT OF EIR ALTERNATIVES
E. FUTURE CONTEXT AND PROJECTIONS
F. TRANSPORTATION
G. BIOLOGICAL RESOURCES
H. HAZARDOUS MATERIALS REGULATORY FRAMEWORK
I. HISTORIC ARCHITECTURAL RESOURCES
J. GROWTH-INDUCING IMPACTS
K. ACRONYMS

APPENDIX A: NOTICE OF PREPARATION

NOTICE THAT AN ENVIRONMENTAL IMPACT REPORT IS DETERMINED TO BE REQUIRED

DATE OF THIS NOTICE: NOVEMBER 29, 1994

LEAD AGENCY: Planning Department-City & County of S.F. 1660 Mission Street, 4th Floor
San Francisco, CA 94103
AGENCY CONTACT PERSON: Paul Deutsch Telephone: (415) 558-6383

PROJECT TITLE: 94.155E - Waterfront Land Use Plan
SPONSOR: San Francisco Port Commission, Port of San Francisco
PROJECT CONTACT PERSON: Kari Kilstrom, Port of San Francisco 274-0536

PROJECT ADDRESS: All lands under jurisdiction of the Port of San Francisco, including the San Francisco waterfront from Hyde Street Harbor on the north to India Basin on the south.
ASSESSORS BLOCK & LOT: Various.
CITY AND COUNTY: San Francisco

PROJECT DESCRIPTION: The Waterfront Land Use Plan proposes land use policy for all lands under Port jurisdiction, encompassing about 7.5 miles of waterfront. The Plan specifies land use policies and acceptable and unacceptable land uses. Refer to attached materials for more details.

THIS PROJECT MAY HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT AND AN ENVIRONMENTAL IMPACT REPORT IS REQUIRED. This determination is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15064 (Determining Significant Effect), 15065 (Mandatory Findings of Sigificance). The Environmental Impact Report will meet the requirements of the California Environmental Quality Act (CEQA). Potential environmental effects of the proposed project to be evaluated in the EIR are listed in the attached materials.

Deadline for filing of an Appeal of this Determination to the City Planning Commission: December 12, 1994. An appeal requires: (1) a letter specifying the grounds for the appeal, and (2) a $206 filing fee.

The public is invited to comment on the scope of the EIR. Such comments must be received by January 14, 1995 to ensure consideration in preparing the Draft EIR.

Barbara W. Sahm

Barbara W. Sahm
Environmental Review Officer

City and County of San Francisco
The Planning Department

1660 Mission Street
San Francisco, CA 94103-2414

November 29, 1994

RE: PORT OF SAN FRANCISCO WATERFRONT LAND USE PLAN
ENVIRONMENTAL IMPACT REPORT
PUBLIC SCOPING MEETING

terested Parties:

The San Francisco Planning Department, Office of Environmental Review is conducting public scoping meeting regarding the scope of work for the Port of San Francisco Waterfront nd Use Plan Environmental Impact Report (Waterfront Plan EIR). This meeting will be on ednesday, December 14, 1994 at 4:00 p.m. in the Ferry Building, The Embarcadero at arket Street, San Francisco. Signs will direct you to the meeting room.

The Waterfront Land Use Plan is being prepared by Port staff through a public planning ocess that began in 1991. The Plan, when adopted by the Port Commission, will provide nd use policy for all property under the jurisdiction of the Port of San Francisco, extending m the Hyde Street Pier at the north end of Fisherman's Wharf to India Basin, about 7.5 les. A November 4, 1994 Revised Plan may be obtained from the Port by calling the aterfront Plan Hotline at (415) 274-0354.

The purpose of the EIR is to provide information about potential significant physical vironmental effects of future activity or development that could occur under the Waterfront an, identify possible ways to minimize the significant effects, and describe reasonable ernatives that cover the range of possible future physical changes to Port lands.

At the scoping meeting, interested parties will be invited to comment on the alternatives oposed for analysis and any other information that should be in the EIR. You are invited to attend the scoping meeting; however, attendance at the meeting is not necessary to make your views known on these matters. Until January 14, 1995, you may write Paul Deutsch at the Planning Department, or phone him at (415) 558-6383, to express your views on what the EIR should include. (If you have views about the Waterfront Plan itself, you should phone the Port directly at 274-0354.) Your views will be considered equally whether you express them at the scoping meeting, in writing, or by phone.

Please contact Paul Deutsch at 558-6383 if you wish further information.

Sincerely,

Barbara W. Sahm

BARBARA W. SAHM
Environmental Review Officer

G:\61\portplan\scoping.ltr

City and County of San Francisco
The Planning Department

1660 Mission St
San Francisco, CA 94103-

NOTICE OF PREPARATION

TO: Responsible and Trustee Agencies

FROM: Planning Department
City and County of San Francisco
Office of Environmental Review
1660 Mission Street
San Francisco, California 94103-2414

RE: Notice of Preparation of a Draft Environmental Impact Report

The City and County of San Francisco will be the Lead Agency and will prepare an Environmental Impact Report for the following project:

94.155E: PORT OF SAN FRANCISCO, WATERFRONT LAND USE PLAN

The Waterfront Land Use Plan proposes land use policy for all property under the jurisdiction of the Port of San Francisco, 7.5 miles of waterfront from Hyde Street Pier on the north to India Basin on the south. An expanded description of the project, and a list of the potential environmental effects are included in the attached materials.

Pursuant to the State CEQA Guidelines, Section 15063, we have determined that an EIR will be required. An Initial Study has not been prepared; all CEQA checklist items will be analyzed in the EIR.

We need to know the views of your agency as to the scope and content of the environmenta information which is germane to your agency's statutory responsibilities in connection with th proposed project. Your agency will need to use the EIR when considering your permit or other approval for the project.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but no later than 30 days after receipt of this notice. Please send your response to Paul Deutsch at the address shown above. Please include the name of a conta person in your agency.

Barbara W. Sahm
Barbara W. Sahm
Environmental Review Officer

11/29/94
Date
(415) 558-6378

ADMINISTRATION
(415) 558-6414

CITY PLANNING COMMISSION
(415) 558-6414

FAX: 558-6409

PLANS AND PROGRAMS
(415) 558-6264

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(415) 558-6

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94.155E: WATERFRONT LAND USE PLAN EIR

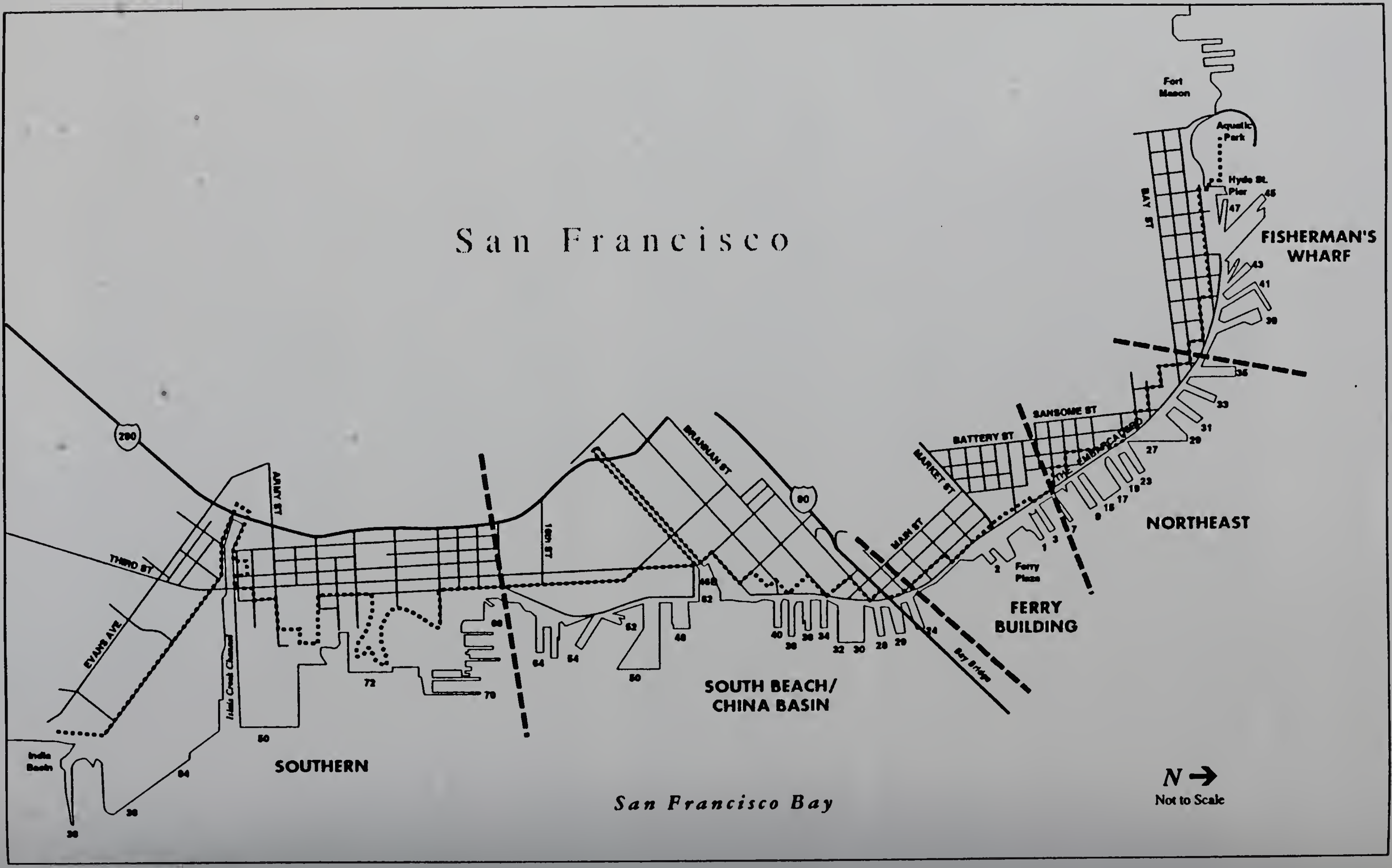
INTRODUCTION AND SETTING

The Port of San Francisco (Port) is developing a land use plan (the "Waterfront Plan") for the entire area under its jurisdiction, which extends for approximately 7.5 miles, generally from the Hyde Street Pier to India Basin. Mandated by the passage in 1990 of Proposition H, the Waterfront Plan would guide use and development of Port lands into the next century. A draft Waterfront Plan was prepared by a Waterfront Plan Advisory Board (the "Advisory Board"), created by the San Francisco Port Commission through a public planning process that began in 1991. The Advisory Board's draft Waterfront Plan was presented to the Port Commission in July 1994. Port staff, while supporting the majority of the Advisory Board's recommendations, proposed some revisions for Port Commission review, as contained in a "revised Draft Waterfront Land Use Plan" dated November 4, 1994. The Port Commission may elect to incorporate these and other revisions and, following public meetings, will designate a preferred Plan which will be the basis for an environmental impact report (EIR) analysis. (If you wish to obtain a copy of the Plan or be advised of the Port Commission's hearings on the Plan, please call the Port's Waterfront Plan hotline at [415] 274-0354.)

The San Francisco Planning Department, Office of Environmental Review is preparing an EIR for the Waterfront Plan. Following completion and certification of the EIR by the San Francisco Planning Commission, the Waterfront Plan would be considered for adoption by the Port Commission. The Planning Commission will consider action on proposed conforming amendments to the San Francisco Master Plan and City Planning Code. The San Francisco Board of Supervisors would also review and act on all Planning Code amendments. The Bay Conservation and Development Commission (BCDC) will be asked to take appropriate action on amendments to plans and policies under its jurisdiction.

The Waterfront Plan area encompasses both piers and shoreside properties that are referred to as 'seawall lots." The total area involved, including existing piers but excluding streets and public ight-of-ways, is approximately 620 acres. As of April 1994, the Port leased about 1.8 million sq. ft. of commercial and maritime space; another 1.5 million sq. ft. was available or lease. Existing development within Port jurisdiction includes a variety of maritime, ndustrial, warehousing, retail, commercial and office uses, and public access, as well as parking nd some residential use. Figure 1 shows the plan area.

xisting uses in the Fisherman's Wharf area include a mix of commercial fishing and tourist-riented retail stores, restaurants, and excursion boats, along with parking and some offices. The an Francisco Maritime National Historic Park (Maritime Museum and Hyde Street Pier) is also cated here. Along the Northeast Waterfront, Port properties are leased for office use and staurants. Existing maritime activity includes a newsprint terminal, cargo warehouses, the an Francisco foreign trade zone, the City's cruise ship terminal, and excursion boats. The area n either side of and including the Ferry Building is largely devoted to ferry operations and ffices and restaurants. Port property south of the Ferry Building is occupied by a number of esidential complexes with associated retail and a marina in the South Beach area. Maritime ctivities south of China Basin Channel include ship repair and tug and tow operations, along ith some bulk cargo shipping at Pier 50. The majority of the Port's shipping activities



Waterfront Plan Area boundary
and subarea boundaries are approximate.

•••••••• Waterfront Plan Area Boundary

SOURCE: Environmental Science Associates

San Francisco Waterfront Plan EIR ■

Figure 1

Waterfront Plan Area

occur on the Southern Waterfront, south of Mariposa Street. This is the location of the Port's two container terminals, only one of which is currently in operation. This area also includes dry and liquid bulk shipping terminals and ship repair.

Development projects currently under way or scheduled include the Embarcadero Roadway and streetcar line construction, an aquarium at Pier 39, reconstruction of the fish processing area at Pier 45, and seismic repair and upgrading of the Ferry Building.

WATERFRONT LAND USE PLAN AND REGULATORY ENVIRONMENT

The Draft Waterfront Plan provides for a variety of land uses in each of five subareas, which include piers and adjacent seawall lots. The subareas and their boundaries are:

Fisherman's Wharf - Hyde Street Pier to Pier 35½ (inclusive)
Northeast Waterfront - Pier 35 to Pier 7
Ferry Building - Pier 5 to Promenade south of the Ferry Building
South Beach/China Basin - Pier 22½ to Mariposa Street (Pier 66)
Southern Waterfront - Piers 68-70 to India Basin

he Draft Waterfront Plan generally does not designate a specific land use at each pier or seawall ot. Rather, the Plan would allow for flexibility in both land use and density of development ithin a range of acceptable uses for each site. The Draft Waterfront Plan includes a matrix of uch acceptable and unacceptable uses for each site, grouped by subarea. Within each subarea, e precise locations of most uses would be determined in the future (as individual projects are roposed). Certain major land uses, such as a cruise terminal, sports arena, or container shipping rminal, are necessarily limited by their footprint and/or capital investment requirements to a w particular sites. Other potential uses, such as retail stores, housing, ferry and water taxi rminals, and hotels, permit more flexibility in siting (although they may be limited by gulatory constraints). The Plan also includes goals, policies and objectives intended to assist ture land use decisions by the Port Commission.

he Waterfront Plan would provide the basis for approval of future individual development ojects, but would not in itself grant development approvals. Likewise, the Waterfront Plan EIR ll analyze the overall effects of implementation of the Plan, but will not necessarily serve as further site-specific environmental review of specific development proposals.

e Draft Waterfront Plan does not propose any changes in existing building height or bulk limits except for a potential sports arena facility at China Basin, where the Plan calls for an increase in the allowable height limit. Most pierside and seawall development would continue to be restricted to a maximum height of 40 feet.

In addition to the Waterfront Plan, future use and development of the Port will be guided by legal and regulatory parameters. While the Port Commission exercises authority over lands under its jurisdiction, the Commission holds most of the lands within its jurisdiction in trust for the people of California. Because of the responsibility to uphold this "public trust," the Port generally can permit on these properties only activities involving navigation, water-related commerce, fishing, public recreation and open space, commercial development that encourages people to use and enjoy the waterfront, and natural resource protection. The State Lands Commission (SLC) has jurisdiction and oversight control over the development of public lands belonging to the State of California, including Port lands in San Francisco, and exercises authority by determining acceptable public trust uses.

The San Francisco Bay Conservation and Development Commission (BCDC) regulates all development in San Francisco Bay and within 100 feet of the shoreline, including development on piers, through policies contained in the San Francisco Bay Plan, the San Francisco Special Area Plan and the San Francisco Pier 7-24 Total Design Plan. BCDC regulations (as well as State Lands Commission interpretations) prohibit non-water-dependent uses such as housing and offices on bay fill, and thus those uses could not be placed on piers if substantial pier rehabilitation were required because material for that purpose is considered new bay fill. BCDC, in a joint effort with the Metropolitan Transportation Commission, is responsible for the San Francisco Bay Area Seaport Plan, which establishes policies and designates areas throughout the region, including the Port of San Francisco, that should be continued for current or reserved for future use as marine terminals and maritime operations. The Seaport Plan, currently undergoing revision, calls for certain properties at the Port to be reserved for maritime use. Finally, the City of San Francisco Master Plan, City Planning Code, and Zoning Map contain policies and regulations to guide development along the waterfront.

WATERFRONT PLAN ALTERNATIVES TO BE ANALYZED IN THE EIR

Because the "project" to be analyzed in the environmental impact report (EIR) is a plan, and not a single development proposal, and because the Draft Waterfront Plan contains an array of potential land uses for each subarea, the challenge for the EIR is to adequately cover the numerous potential "future waterfront" outcomes. To address this issue, the EIR will analyze three alternatives at an equal level of detail: two development scenarios and a so-called "no project" scenario. These alternatives have been defined in such a way as to bracket the potential range of uses and the resulting environmental impacts. (The EIR will also analyze up to four "variants" of the alternatives at a lesser level of detail; two variants have been defined to date.) The No Project Alternative and each of the two development alternatives are based on a series of assumptions devised by Port and Planning Department staff, along with the EIR consultant team, to reflect potential future conditions with respect to economic development, the Port's responsibilities under the public trust, policies in the San Francisco Master Plan, BCDC regulations, the updated Seaport Plan, and other influencing factors or constraints. Those assumptions, reflecting the current thinking of the EIR team, are discussed later.

The three EIR alternatives, including the No Project Alternative, generally represent a progression from minimum to maximum new development and activity level. Under all three alternatives, many of the existing waterfront uses would remain. All alternatives would include the projects described above as under way or scheduled, including the Embarcadero Roadway and streetcar line, an aquarium already approved for Pier 39, a fish processing center at Pier 45, and seismic repair and upgrading of the Ferry Building. The alternatives assume that Plan objectives for non-industrial water-dependent uses, including fishing, cruise ships, excursion boats, ferries, recreational boating, tugboats and water taxis are achieved to varying degrees at various locations. The alternatives vary the mix and location of these non-industrial as well as industrial maritime uses (and other uses) to highlight potential adverse effects on the environment that could result from the policies contained in the Waterfront Plan.

Based on preliminary estimates of the level of use that could reasonably occur within each subarea by the EIR analysis year of 2010, the **No Project Alternative** would add to Port lands about 23,000 sq. ft. of local-serving retail activity and about 115,000 sq. ft. of visitor-serving and specialty retail activity. It would include about 139,000 sq. ft. of new office/research and development (R&D) space, 140,000 sq. ft. of light industrial space, 125 hotel rooms (all on seawall lots), 75 residential units, and about 79,000 sq. ft. of assembly and entertainment/recreation uses.[1] Under this alternative, all container shipping activity would be consolidated at Piers 94-96, with a small increase in activity; the North Container Terminal (Pier 80) would be occupied by interim industrial uses. Dry and liquid bulk shipping would continue at Piers 90-92. Ship repair operations would be consolidated, and lands available for maritime support activities would be underutilized.

Alternative A would generally represent a moderate-development scenario, but with an emphasis on residential development and local-serving businesses, and on interim uses (such as light industrial). It would add, by 2010, about 104,000 sq. ft. of local-serving retail activity, about 130,000 sq. ft. of regional retail activity, and about 295,000 sq. ft. of visitor-serving and specialty retail activity. Alternative A would include about 121,000 sq. ft. of new office/R&D space, 1,345,000 sq. ft. of light industrial space (most of which would be interim uses south of China Basin), 535 residential units, and about 309,000 sq. ft. of assembly and ntertainment/recreation uses. Alternative A would not include any hotel development. Under his alternative, all container shipping activity would be consolidated at Piers 94-96, with a small ncrease in activity, as with the No Project Alternative. Alternative A would include bulk hipping at Pier 80 and dry and liquid bulk shipping at Piers 90-92. Ship repair operations would ccur generally as they do today, and additional maritime support activities would occur along he southern waterfront.

lternative B would encompass the greatest level of new development and improvements to ort facilities. It would add, by 2010, about 39,000 sq. ft. of local-serving retail activity, about 70,000 sq. ft. of regional retail activity, and about 393,000 sq. ft. of visitor-serving and pecialty retail activity. Alternative B would include about 527,000 sq. ft. of new office/R&D pace, about 380,000 sq. ft. of light industrial space, about 85,000 sq. ft. of general industry pace, 1,100 hotel rooms (all on seawall lots), and about 1,222,000 sq. ft. of assembly and ntertainment/recreation uses. Alternative B would not include any residential development. nder this alternative, all container shipping activity would be consolidated at Piers 94-96, with olumes increasing to a level generally consistent with the total activity envisioned (to date) in e Seaport Plan update. Break bulk, neo-bulk, dry bulk and liquid bulk shipping would occur at arine terminals in the South Beach/China Basin and Southern subareas (Pier 48, Pier 50, iers 68-70, Pier 80, and Piers 90-92). Levels of activity at the terminals would be generally nsistent with the capabilities identified (to date) in the Seaport Plan update. Ship repair erations would continue, and maritime support activities would occur at a number of locations uth of China Basin.

one of the alternatives proposes the following uses on piers: hotels, residential development, or neral office space; where those uses are proposed, they are proposed for seawall lots. Office e is proposed at the Ferry Building and Agriculture Building and certain other historic or bulkhead or pierhead buildings. Generally, the greatest amount of new non-water-dependent development would occur in the Ferry Building subarea with the No Project Alternative; the greatest amounts of new development would occur in the Southern, South Beach/China Basin (north of China Basin Channel), and Northeast subareas with Alternative A; and the Northeast Waterfront would experience the greatest amount of new non-water-dependent development under Alternative B. Increased industrial maritime activity under Alternative B would be concentrated in the South Beach/China Basin and Southern Waterfront subareas.

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[1] Assembly and entertainment/recreation could include such uses as auditoriums, cinema/live theaters, useums, amusement parks, conference/exhibition halls, and public recreation facilities.

The variants to EIR alternatives identified to date are (1) potential development of a sports arena near the foot of Berry Street, as a variant to Alternative B; and (2) removal of certain piers that would be surplus to needs of maritime uses, with the resulting bay frontage to be reserved as open space, as a variant to Alternative A.

ASSUMPTIONS USED IN THE DEVELOPMENT OF EIR ALTERNATIVES

The regulatory environment in which the Port operates necessarily constrains the range of alternative outcomes that might occur, so that the EIR must start with a narrower range of alternatives than it might without such constraints. Additionally, because it is not possible to predict all future physical changes that could occur under the Waterfront Plan, the alternatives are theoretical, and represent certain sets of assumptions. Neither of the development alternatives (A and B) is necessarily indicative of an actual outcome; rather, these alternatives are designed to represent a range of future physical changes, all of which are possible under the Plan, so that the EIR can cover a broad range of development and activities. This approach is intended to provide the public and decision-makers with an understanding of the relationships between various uses, related environmental impacts, and possible mitigation measures or Plan revisions to reduce impacts. The adopted Waterfront Plan and its resulting physical effects would likely be some combination of Alternatives A and B, and the adopted Plan might have other components that would fall within the range of impacts analyzed. The EIR team intends that the alternatives and variants described, plus those that may be added as a result of the public scoping process, will satisfy CEQA requirements for a reasonable range of alternatives focusing on reducing or eliminating physical environmental impacts. As this broad range of alternatives is possible under the flexibility provided by the Waterfront Land Use Plan, the EIR is not anticipated to evaluate alternative Plans.

Alternatives A and B assume that a Waterfront Plan is approved by the Port Commission, in compliance with Proposition H, while the No Project Alternative assumes that the Waterfront Plan is not adopted, and that development decisions, subject to existing regulations, occur on a case-by-case basis.

A single cumulative future regional setting (job growth, housing, population, traffic, development, etc.) for San Francisco and the Bay Area will be assumed for all three alternatives; the different levels of development in Port areas for each of the three alternatives assume differing waterfront shares of regional development changes. For the No Project Alternative, the waterfront's share of regional economic activity remains constant or decreases over time. Alternative A assumes that the waterfront's share of regional economic activity increases, with the emphasis on smaller scale, interim uses, or local-serving activity. Alternative B assumes the largest increase in waterfront economic activity, with the emphasis on visitor attractions and commercial/recreation activity. Each of these scenarios implies other assumptions: that under the No Project Alternative, Port properties would continue to deteriorate due to inadequate maintenance, as at present. Alternative A would result in limited additional revenue for maintenance, but some piers would deteriorate in the long term. Only Alternative B would generate sufficient revenue to maintain and improve any and all of the piers that the Port may wish to make available for continued use or reuse.

Alternative A would focus on adaptive reuse of Port properties, rather than wholesale changes in facilities, and achievement of some public trust objectives would likely be financially infeasible. Alternative B would result in more intensive development on seawall lots that would, in turn, allow for maximum achievement of public trust objectives on the Port's waterside properties. The No Project Alternative would result in a less comprehensive approach to development, with an emphasis on interim uses that could hinder the Port's ability to achieve long-term public trust objectives. Alternatives A and B would each require amendment of State Lands Commission policies governing interim uses to permit some interim uses proposed. In the No Project Alternative, no such change is assumed, and interim uses would be limited to five years or less, as at present.

Alternatives A and B would each necessitate some changes to existing Bay Conservation and Development Commission (BCDC) regulations. Alternative A would reflect current BCDC policy that replacement fill (in this case, piers) be no more than 50 percent of what was removed. Rules would change to permit accessory commercial uses and relaxed public access requirements for interim uses. Alternative B would permit more than 50 percent replacement fill, would seek consistency with the State Lands Commission with regard to allowable uses (e.g. maritime offices and accessory parking), and would seek to extend exemptions for the Ferry and Agriculture buildings to other historic buildings to allow limited non-water-oriented uses such as small offices. The No Project Alternative would result in development that reflects existing BCDC requirements.

Both Alternatives A and B would incorporate the Waterfront Plan as part of the San Francisco Master Plan; each plan would be amended for consistency with the other. The No Project Alternative would generally result in development consistent with the current Master Plan. Both Alternatives A and B would require changes in the City Planning Code consistent with the land use designations and to permit required parking to be provided at a greater distance from the primary use; the No Project Alternative would include no such assumption.

The overall level of industrial maritime (shipping, ship repair, and related activities) activity within the Bay Area is expected to be driven by global and national economic considerations eyond the Port's control. Some of the ability of the Port of San Francisco to capture a larger share of Bay maritime activity is also outside of the Port's control, including such factors as verall shipping activity and the logistical and cost advantages of the Port of Oakland and other ompeting Bay Area ports. The most optimistic scenario under the Seaport Plan would result in ncreased maritime activity at the Port, but not to the extent that maritime activity would once gain become the dominant activity in every area of the San Francisco waterfront. For these easons, there is no realistic set of assumptions that would lead to the analysis of an "all-maritime" or "maritime-dominant" alternative. Under Alternative B, the Seaport Plan forecasts or maritime activity through the year 2010, considered optimistic by many maritime experts, would be assumed to be achieved; the other two alternatives would be assumed to have less industrial maritime activity.

Only Alternative B would assume full buildout of the proposed Mission Bay project (in accordance with the Mission Bay Specific Plan), which is adjacent to the southern portion of the South Beach/China Basin subarea. The other two alternatives would assume that a portion of Mission Bay would be developed.

ENVIRONMENTAL ISSUES TO BE INCLUDED IN THE EIR

The Waterfront Plan EIR will be a program EIR that will be more general in approach and broader in scope than an EIR for a site-specific project. The EIR scope will be comprehensive so as to fully capture, at a program level of detail, the potential environmental impacts of adoption and implementation of the Waterfront Plan. The EIR will generally analyze potential environmental impacts of the Waterfront Plan on a subarea-by-subarea basis. (That is, an overall potential amount of future development by land use type will be analyzed; with the exception of a few clearly site-specific and/or major land uses, such as a cruise terminal, sports arena, or container shipping terminal, the EIR will not assume precise locations of future uses within the subarea.) The aggregation of land uses by subarea is expected to provide information about geographic areas of analysis that is considerably more useful than if the entire waterfront were examined as a whole, while recognizing that exact locations of specific future developments cannot be predicted, thus allowing for flexibility in the ultimate location of future land uses. Future development that may be proposed pursuant to the Plan will undergo applicable environmental review at such future time to determine more specific potential impacts. Issues to be analyzed in this EIR include the following:

Housing, Employment and Population - housing and job opportunities, by type; the jobs-housing relationship and implications for the city's housing market; impacts on nearby areas.

Transportation - local circulation, parking, transit service and pedestrian access; the safety of pedestrian traffic between new waterside land uses and the rest of the City; regional impacts.

Visual Quality and Urban Design - conceptual effects on the visual quality of the waterfront, with special attention paid to important and/or high-intensity land uses that could have the greatest effects on urban design.

Land Use and Plans - description of existing land uses; major changes in each subarea, tied to the development forecasts produced in the housing, employment and population analysis; compatibility of plan alternatives with existing plans and policies; potential changes in laws and regulations that could be required to implement aspects of the Waterfront Plan.

Cultural Resources - potential effects on subsurface prehistoric and historic resources and historic structures, including buildings that may be eligible for the National Register of Historic Places.

Hazardous Waste - potential for contamination in the project area; potential for project impacts on public health and safety.

Biological Resources - impacts to marine life from disturbance of the Bay; impacts to the Pacific herring; impacts relating to dredging and dredge disposal.

Hydrology and Water Quality - direct impacts on San Francisco Bay; indirect impacts to the Bay from runoff and discharges to the City's sewer/storm drain system; effects on local groundwater; construction impacts.

Geology, Seismology and Soils - geologic hazards, including differential settlement, severe groundshaking during large earthquakes, accompanied locally by liquefaction, lurching, and lateral spreading.

Air Quality - emissions of criteria air pollutants from mobile and stationary sources; impacts from construction and demolition; conflicts between proposed residential areas and existing or proposed industrial emissions sources.

Noise - Noise/land use compatibility issues for existing and proposed sensitive land uses; impacts associated with construction and stationary equipment; traffic-related noise, particularly truck traffic.

Public Services and Utilities - the ability of service providers to adequately serve development that could occur under the plan.

Energy - energy consumption would not be expected to result in significant impacts.

PUBLIC REVIEW AND COMMENT

Because of the complexity of the Waterfront Plan, public input into the selection of EIR alternatives is essential. The two key questions that you should consider when reviewing this material are:

1. Do the EIR alternatives represent a sufficient range of potential waterfront uses to permit the Port Commission to approve a Waterfront Plan that will encompass all of the land uses designated as acceptable on land under Port jurisdiction?

2. Are the environmental issues identified for analysis in the EIR comprehensive enough to allow the Port Commission to effectively evaluate the potential physical environmental consequences of adoption of the Waterfront Plan?

FOR MORE INFORMATION

For more information on the waterfront planning process, including how to obtain a copy of the Draft Waterfront Plan, please contact:

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For more information on the EIR process, please contact:

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The next public hearing on the Waterfront Plan will be Monday, December 19, at 4:00 at the Port Commission hearing in the Ferry Building. If you received this notice, you will receive notification when the Draft EIR is available. If you did not receive this notice, contact Paul Deutsch to put your name on the EIR mailing list and Kari Kilstrom to put your name on the Plan mailing list.

APPENDIX B: SEAWALL LOT NUMBERS AND ASSESSOR'S BLOCK AND LOT NUMBERS

Appendix B
Seawall Lot/Assessors Block Correlation Chart

Most planning maps of the City and County of San Francisco label sites according to their Assessor Block number. However, Port maps and documents (including this Draft Waterfront Land Use Plan) commonly refer to non-pier properties as seawall lots, which have different numbers. This Chart shows the correlation between the two numbering systems (assessors block and seawall lots).

SEAWALL LOT #	ASSESSORS BLOCK #	SEAWALL LOT #	ASSESSORS BLOCK #
Fisherman's Wharf Waterfront		South Beach/China Basin Waterfront	
300/301	3/4	328	3769 (portion)
302	6	329	–
303	7	330	3770 / 3771
311	15	331/332	3790 / 3791
312	16	–	–
313	17	333	3792
Northeast Waterfront		334	3801
314	35	335	--
315	37 (portion)	336	--
316	36	337	3880
317	57	338	--
318	58	339*	3839 / 3851 / 3852 / 3940
319	82	340*	3892
320	109	343*	–
321	110	345*	3941
322	137	Southern Waterfront	
322-I	140 (portion)	344/ 344.1/ 352*	4502A (portion)
323	138	354 / 354.1*	4379 / 4380
324	139	349*	4046 / 4052 / 4110 (portion) 4111 / 4120 (portion)
Ferry Building Waterfront			
327	–		
348	–		
347-N	3715 (portion)		
347-S	3742 (portion)		
351	202 (portion)		

Correlations are approximate

H:WP51/chapter4,5 end

APPENDIX C: WATERFRONT LAND USE PLAN LAND USES

Appendix C

Glossary of Terms

Academic Institutions - Institutions or classrooms for educational purposes, including but not limited to: academic, professional, cultural, business, technical, industrial arts, fine arts or other types of education.

Accessory Parking - Parking which is associated with existing Port activities or which is provided as a requirement for new development.

Artist/Designer Studios and Galleries - Facilities for artisans and designers (e.g. artists, designers, craftpersons, graphic artists, sculptors, wood workers, etc.) including but not limited to: space for manufacturing/creating, exhibiting and/or selling of products (e.g. studios, galleries, workshops, warehouses), which shall not be used for residences unless all applicable local and state authorizations are obtained.

Assembly and Entertainment - Facilities for entertainment and attractions including but not limited to: band shells, auditoriums, theaters (cinemas and live performances), night clubs, amusement parks, conference, convention and event facilities, exhibition halls, public markets and children's entertainment.

Bay Oriented Commercial Recreation and Public Assembly Uses - Facilities specifically designed to

its shoreline, such as restaurants, specialty shops and

Break-bulk - Freight which generally is made up of similar size pieces which is loaded into or unloaded from a ship's hold in small bulk quantities, usually loosely, on a pallet or in a cargo net. Breakbulk was the traditional method of cargo handling along the Port's finger piers before innovations in container cargo shipping.

Bulkhead Buildings - Structures, generally built on top of the seawall north of China Basin Channel, most of which extend between pierhead buildings.

Burton Act - State legislation which sets the terms and conditions for the transfer of Port property to the jurisdiction of the City and County of San Francisco, subject to control and management by a local Port Commission. (*California Statutes*, Chapter 1333, 1968.)

California State Lands Commission - A State agency with jurisdiction over the lands granted in trust to the Port of San Francisco. Commission staff monitors Port activities and projects to ensure compliance with the *Burton Act* (legislation that transferred Port lands to the City) and the public trust doctrine.

Cargo Shipping - Primary, support and ancillary facilities for waterborne transport of cargo shipped in container boxes or in bulk (dry bulk, liquid bulk, break-bulk, neo-bulk) including but not limited to: shipping terminals and berths, cargo handling, storage and warehousing, equipment storage and repair facilities, cargo sourcing, container freight stations, freight rail and truck access, ship servicing, administrative functions, and employee support services, (e.g. training facilities, parking).

Community Facilities - Public safety and community service facilities, including but not limited to: fire and police stations, postal services, day care, health care, libraries, community meeting rooms, and medical emergency helipad.

Container Cargo - Cargo which is transported in standard sized boxes.

Dry Bulk - Dry loose freight, such as grain and various ores, which is loaded or unloaded via conveyor belts, spouts or scoops.

Ferry & Excursion Boats and Water Taxis - Primary, support and ancillary facilities for waterborne transportation (e.g. commuter ferries, water taxis, hovercrafts) or short-term excursions (e.g. charter boats, mini-cruises, sightseeing, gaming, dining and entertainment on the water) including but not limited to: passenger terminals and berthing areas, storage, employee or passenger parking, administrative functions, ship servicing areas, layover berths, fueling stations and other boat or passenger services.

Fill - As defined in the *McAteer-Petris Act* which created the Bay Conservation and Development Commission, fill means "earth or any other substance or material including pilings or structures placed on pilings, and structures floating at some or all times and moored for extended periods, such as houseboats and floating docks."

Fill Credit - A proposed concept whereby existing fill could be removed and relocated to another site.

Fishing Industry - Primary, support and ancillary facilities for commercial or sport fishing operations including but not limited to: fishing boat berths and harbors, fish processing, handling (e.g. cleaning and packing) and distribution facilities, support services (e.g. fuel docks, Fisherman's Wharf Chapel, fishing research and education facilities), storage, maintenance and administrative functions, and employee services (e.g. training facilities and parking).

General Industry - Facilities for enclosed and open air industrial activities, including but not limited to: recycling operations, automobile repair and related services, bio-remediation, sand and gravel operations, transmission facilities, and manufacturing operations.

General Office - Includes but is not limited to: administrative, management, executive, business service, research and development, and professional services for small and large companies.

Historic Ships - Primary, support and ancillary facilities for display of historic vessels including but not limited to: berthing areas, museum/exhibit and administrative space, storage maintenance and workshop space and employee and visitor parking.

Hotel - Facilities for overnight lodging, including hotels, boatels, bed and breakfast [except for overnight lodging on ships which is consistent with a primary water-dependent use (e.g. temporary or ceremonial berthing, recreational berthing, etc.)]

Liquid Bulk - Liquid freight, such as petroleum or vegetable oil, which is shipped in tankers rather than in drums or other small, individual units.

Maritime - A general term used to describe industrial, commercial or recreation activities related to waterborne commerce, navigation and recreation, including but not limited to: cargo shipping, ship repair, ferries and excursion boats, cruises, recreational boating, historic ships, fishing industry, berthing.

Maritime Office - Administrative and business functions for any maritime industry including, but not limited to: import/export businesses, legal and professional services.

Maritime Support Services - Ancillary functions needed to support maritime activities including but not limited to: tug and tow operations, bar pilots, ship chandlers, associated parking and maintenance, equipment storage, repair and warehouse facilities, environmental services, Foreign Trade Zone and Port maintenance.

McAteer-Petris Act - An Act passed by the State legislative in 1969 which created the San Francisco Bay Conservation and Development Commission (BCDC).

Museums - Includes but is not limited to: facilities for exhibits on San Francisco history, maritime history, ongoing exhibitions, cultural and exhibit space, etc.

Neo-bulk - Freight such as autos, steel products and newsprint paper rolls which is shipped in large bulk quantities.

Non-Accessory Parking - Parking open to general public use which is not specifically to serve existing Port activities or required for new development.

Non-Water Dependent Activities - Activities and

Open Space - Includes but is not limited to: parks, wildlife habitat, wetlands, large plazas, tot lots, fishing piers and related public amenities.

Parking - Includes but is not limited to: surface parking lots or above or below grade garages. (See also Accessory Parking and Non-Accessory Parking.)

Passenger Cruise Ships - Primary, support and ancillary facilities for large, generally international passenger cruise vessels with sleeping accommodations typically for over 250 passengers (e.g. ships providing long-distance vacation and recreation voyages which may include gaming, dining and entertainment on board), including but not limited to: passenger terminals and berthing areas, waiting and customs areas, publicly accessible bon voyage and greeting areas, and passenger-serving retail, entertainment and commercial services, ship servicing areas, bus, taxi and visitor pick-up/drop-off and parking areas.

Pierhead Buildings - Structures, generally built on top of the seawall and spanning the width of the pier, which are the entrances to piers.

Piers - Pile-supported structures over water, which generally have more regulatory restrictions imposed on their use than other Port facilities. The fact that a Port facility is, or is necessarily mean it is in fact a Pier. The actual construction characteristics, as opposed to the common names of facilities, is the determining factor.

Port-Priority Use and Port-Priority Use Areas - The BCDC/MTC *Seaport Plan* designates areas that should be reserved for port priority uses, including marine terminals and directly-related ancillary activities such as container freight stations, transit sheds and other temporary storage, ship repair, and support transportation uses including trucking and railroad yards, freight forwarders, government offices related to the port activity, chandlers and marine services. Uses that are permitted within port-priority use areas may also include public access and public and commercial recreational development, provided they do not significantly impair the efficient utilization of the port area.

PortWalk - New public access walkways and amenities extending onto piers, where feasible, as major new mixed use pier developments occur that, together with public sidewalks and rights-of-way and pedestrian improvements under construction along the Embarcadero, will provide continuous pedestrian access through waterfront activity areas. PortWalk improvements will primarily be located north of China Basin, but also could be established

Power Plants - Facilities and utility installations to generate power including, but not limited to, cogeneration power plants.

Proposition H - A ballot measure adopted by San Francisco voters in November 1990 which imposed a moratorium on new "non-maritime" development pending completion of a land use plan for a portion of the waterfront property under the jurisdiction of the Port of San Francisco, and prohibited hotel developments or boatels on that property.

Public Access - Areas or features which are open to the public, often provided as part of new development, including but not limited to: esplanades, boardwalks, pedestrian access to piers, small plazas, visual or informational displays, kiosks, signage, public fishing and viewing areas and related public amenities.

Public Trust - Under the public trust doctrine, title to tidelands and lands under navigable waters (as existed when California became a state) is held in trust by the State for the benefit of the people of California and must be used for purposes of commerce, navigation and fishing as well as for environmental and recreational purposes. The Port of San Francisco is the trustee for public trust lands granted to the City by State legislation in 1968 (i.e. the *Burton Act*).

Recreational Boating and Water Use - Primary, support and ancillary facilities for recreational boating and other water sport enthusiasts (e.g. swimmers, kayakers and windsurfers) including but not limited to: sailing center for yachting events, swimming, rowing and boating clubs, marinas, visiting boat docks and moorings, boat rental facilities, boat launches, fueling stations, repair and dry storage facilities, administrative functions, visitor, boat trailer and employee parking, public restrooms, and other public facilities.

Recreational Enterprises - Facilities for non-maritime recreation-oriented activities including but not limited to: athletic fitness facilities, indoor and outdoor sports courts, jogging tracks, health and fitness centers and other non-maritime recreation amenities.

Residential - Includes but is not limited to: multi-family unit developments, and, in the southern waterfront, an RV park.

Retail - Retail sales of goods and services, including but not limited to: restaurants and other eating and drinking establishments, shops, personal services, dry goods, public and other markets, retail outlets, gas stations and carwashes.

San Francisco Bay Conservation & Development Commission (BCDC) - A state-created agency with authority to permit or deny any project in or over the San Francisco Bay or within 100 feet of the shoreline, after reviewing the project in light of specified criteria. BCDC's responsibilities include protecting San Francisco Bay from excessive fill and preserving the Bay waterfront for Bay-oriented or water-dependent uses.

Seawall Lots (or "SWL") - Parcels of land owned by the Port which generally lie inland of the seawall which separates land from the Bay. North of China Basin, seawall lots usually are located across The Embarcadero from the water (or along Jefferson Street in Fisherman's Wharf or near King Street in South Beach). South of China Basin, seawall lots more often abut the water, but they are not pile-supported structures like piers.

Ship Repair - Primary, support and ancillary facilities for repair, restoration, and maintenance of large and small vessels, including but not limited to: drydock and berthing areas, warehouses, workshop and storage areas, administrative functions, and employee support services, (e.g. training facilities, parking).

Sports Facilities - Facilities which accommodate professional sports events such as basketball, baseball, hockey and tennis, which also may be used for non-sport related performances and events, including but not limited to arenas and ballparks, with support and accessory activities such as food services, automobile, bus and taxi parking, pick-up and drop-off zones.

Temporary & Ceremonial Berthing - Primary, support and ancillary facilities for berthing of historic, military or other visiting vessels on a temporary basis including but not limited to: berthing and passenger greeting, bon voyage and waiting areas, bus, taxi and visitor pick-up/drop-off and parking areas.

Transportation Services - Facilities for land-based, water-borne or intermodal (e.g. connections between water and land transportation services) transportation operations, including but not limited to: transit and traffic facilities, areas for ticket sales, passenger information and waiting, bus, automobile, taxi, pedicab and horsedrawn carriage staging areas and pick-up and drop-off zones, and related administrative functions.

Visitor Services - Facilities and information services oriented to visitors, including but not limited to: programs providing education and information to acquaint visitors with current and historical activities of the Port, the City, maritime operations or similar programs.

Warehousing/Storage - Includes but is not limited to: facilities for storage generally in enclosed buildings, and related transport and distribution of general (non-maritime cargo) goods. Mini-storage warehouses are prohibited on piers or within 100 feet of the shoreline.

Water-Dependent Activities - Activities, businesses or industries which depend on a waterfront location to function, such as cargo-related activities, berthing of historic, ceremonial or other ships, ferry and excursion boat operations, fishing industry uses, maritime support uses, recreational boating and water use, ship repair, and water taxi docking.

Water-Oriented Uses - Under the *McAteer-Petris Act*, BCDC can permit Bay fill only for certain "water-oriented" uses specified in the law or "minor fill for improving shoreline appearance or public access to the Bay." The water-oriented uses the law permits include water-related industry, bridges, wildlife refuges, and water-oriented commercial recreation and public assembly. Housing and offices are not considered water-oriented uses.

Wholesale Trade/Promotion Center - Facilities for wholesale storage, promotion, sales and distribution of products, including but not limited to: exhibition and conference spaces, ancillary space for promotional displays and demonstrations, and marketing services, particularly those which enhance international trade.

Key

A = Acceptable Use
E = Existing Acceptable Use (4)
E/I = Existing Use/May Continue As Interim Use
X = Accessory Use
E/X = Existing Accessory Use

	Maritime Uses (5)											Open Spaces/Public Accss		Residential Uses	Commercial Uses											Other Uses					
	Cargo Shipping	Fishing Industry	Ferry and Excursion Boats	Historic Ships	Maritime Office	Maritime Support Services	Passenger Cruise Ships	Recreational Boating and Watelse	Ship Repair	Temporary and Ceremonial Berng	Water Taxis	Open Space	Public Access	Residential	Artists/Designers	Assembly and Entertainment	General Office (6)	Hotels	Museums	Parking	Retail (includes restaurants)	Recreational Enterprises	Visitor Services	Warehousing/Storage	Wholesale Trade/Promotion Cen	Academic Institutions	Community Facilities	General Industry	Power Plant	Sports Facilities	Transportation Services
Aquatic Park Docks								E				E	E																		
Hyde Street Pier		A	E	E		E			E	E	A	E	E						E	X	E		E				E				E
Proposed Hyde Street Harbor		A	A		A	A		A		A	A	A	A							X	A										
Outer Lagoon (Water)		E	E	A		E		E			A																				
Fish Alley (Seawall Lot 303)		E	E	A	E	E					A		E		E/I	A	E		A	E/X	E		A	A			A				
Seawall Lot 302		E	E	A	A	A					A		E		E/I	E	E		A	E/X	E		A	E			A				
Pier 47/47a		E	A		A	E		A		E	A	A	E							E/X	E										
Inner Lagoon (Water)		E	E	A		E		E			A																				
Pier 49		E	E	A		E		E			A	A	E						A	E/X	E		A				A				
Pier 45 West		E			A	A				A		A	A			A				E/X	A		A								
Pier 45 East		A	A	E	A	A				E	A	A	A			A			A	E	A		A				A				
Seawall Lot 300/301												A	E			A				E	E		A								E
Pier 43½			E	A						A	A	A	E			A				E	E										E
Pier 43			E	A		A				A	A	A	E			A					E		A								
Pier 41½			E		E	A				A	A		E								E										
Pier 41			A	A							A	E	E																		
Pier 39. 39½. 35½			E	A				E		A	A	E	E			E			A	E/X	E		A								E
Seawall Lot 311/312												E		A		A	A	A		E	A										A
Seawall Lot 313														A		A	E	A		A	A										

Table Notes

1 This table focuses primarily on acceptable long-term uses for the sites described. The Draft Plan also allows other interim uses on Port property, which uses are not identified in this table. See Chapter 3 for a description of interim use policies.

2 Refer to Chapter 3 and Chapter 4 for General Land Use Policies and specific Development Standards which apply to the acceptable uses and sites identified in this table.

3 Definitions of land uses are included in Appendix C, Glossary of Terms.

4 An "E" indicates that the use already occurs on site and is an acceptable long-term use. The amount of space devoted to this use on each site may be expanded or contracted, if consistent with the land use objectives for the area.

5 The table identifies acceptable maritime and maritime support activities best suited for the sites in this area. However, the Port Commission retains the authority to use Port sites for any maritime uses.

6 Unless otherwise indicated, an "E" for General Office on pile supported structures reflects existing general offices in pierhead or bulkhead buildings, which are acceptable long-term uses. An "E/I" indicates existing general office uses in structures on the pier deck, which are allowed as interim uses pursuant to the interim use policies in Chapter 3.

THE NORTHEAST WATERFRONT ACCEPTABLE LAND USE TABLE (1, 2, 3)

Key

A = Acceptable Use
E = Existing Acceptable Use (4)
E/I = Existing Use/May Continue As Interim Use
X = Accessory Use
E/X = Existing Accessory Use

	Maritime Uses (5)											Open Spaces/Public Access		Residential Uses	Commercial Uses											Other Uses					
	Cargo Shipping	Fishing Industry	Ferry and Excursion Boats	Historic Ships	Maritime Office	Maritime Support Services	Passenger Cruise Ships	Recreational Boating and Water Use	Ship Repair	Temporary and Ceremonial Berthing	Water Taxis	Open Space	Public Access	Residential	Artists/Designers	Assembly and Entertainment	General Office (6)	Hotels	Museums	Parking	Retail (includes restaurants)	Recreational Enterprises	Visitor Services	Warehousing/Storage	Wholesale Trade/Promotion Center	Academic Institutions	Community Facilities	General Industry	Power Plant	Sports Facilities	Transportation Services
Pier 35			A	A	E	E	E			E	A		A			A	E		A	E/X	A		A	E/I	A						
Pier 33, 33½, 31½		E	E	A	A	A	A				A	A	A			A	E		A	E/X	E		A	E/I	A			E/I			
Seawall Lot 314														A			A	A		E	E										
Pier 31					A	A							A							X				E/X							
Seawall Lots 315, 316, 317, 318, 319, 322												E	E	A			E	A		E	E						X				
Pier 27-29, 29½	E		A	A	E	E	A			E	A	A	A			A	E*		A	X	A	A			A		A				
Pier 19-23, 23½	E		A		E	E				A	A		A			A			A	X	E	A		E/X			A				
Seawall Lot 320												E																			
Pier 15-17	E		A	A	E	E				E	A	A	A			A	E		A	X	A	A		E/I	A		A				
Seawall Lots 321, 323, 324, 322-I												A		A	A	A	E	A	A	E	A	A					X				
Pier 9, 9½			E		E	E		A		A	A		A			A	E/I			E/X	A										
Pier 7½													A						A	E/X	E		A								
Pier 7												E	E																		

* General Office is an acceptable use in non-bulkhead/pierhead annex buildings fronting on The Embarcadero.

Table Notes

1 This table focuses primarily on acceptable long-term uses for the sites described. The Draft Plan also allows other interim uses on Port property, which uses are not identified in this table. See Chapter 3 for a description of interim use policies.

2 Refer to Chapter 3 and Chapter 4 for General Land Use Policies and specific Development Standards which apply to the acceptable uses and sites identified in this table.

4 An "E" indicates that the use already occurs on site and is an acceptable long-term use. The

5 The table identifies acceptable maritime and maritime support activities best suited for the sites in this area. However, the Port Commission retains the authority to use Port sites for any maritime uses.

6 Unless otherwise indicated, an "E" for General Office on pile supported structures reflects existing general offices in pierhead or bulkhead buildings, which are acceptable long-term

allowed as interim uses pursuant to the interim use policies in Chapter 3.

THE FERRY BUILDING WATERFRONT ACCEPTABLE LAND USE TABLE (1, 2, 3)

Key

A = Acceptable Use
E = Existing Acceptable Use [4]
E/I = Existing Use/May Continue As Interim Use
X = Accessory Use
E/X = Existing Accessory Use

	Maritime Uses (5)											**Open Spaces/Public Access**		**Residential Uses**	**Commercial Uses**											**Other Uses**					
	Cargo Shipping	Fishing Industry	Ferry and Excursion Boats	Historic Ships	Maritime Office	Maritime Support Services	Passenger Cruise Ships	Recreational Boating and Water Use	Ship Repair	Temporary and Ceremonial Berthing	Water Taxis	Open Space	Public Access	Residential	Artists/Designers	Assembly and Entertainment	General Office (6)	Hotels	Museums	Parking	Retail (includes restaurants)	Recreational Enterprises	Visitor Services	Warehousing/Storage	Wholesale Trade/Promotion Center	Academic Institutions	Community Facilities	General Industry	Power Plant	Sports Facilities	Transportation Services
Seawall Lot 351												A		A		A	A			E	A	A	A				A				
Pier 5 Pierhead / Bulkhead			E	A	A	A											E		A		A	A	A				A				
Pier 3			E	E	E	A		A		E	A	A	E		A	A			A	E/X	A	A	A	E		A	A				A
Pier 1½ Pierhead / Bulkhead					E	E									A	A	E		A		A	A	A	E			A				
Pier 1			E	A	E	A		A		E	A	A	A		A	A	E		A	E	E	A	A	E		A	A				A
Pier ½			E								A	E	E			A	A			E	A		A								A
Ferry Building			E	A	E			A		A	A		A		E	E	E		A	E/X	E	A	A			A	A				E
Pier 2 and Ferry Plaza			E								A	E	E			E				E/X	E		A								A
Agriculture Building			A	A	E			A		A	A				E	A	E		A	E/X	A	A	A			A	A				A
Promenade								A				E	E																		
Future Rincon Park, Seawall Lots 327, 348								A			A	A	A							X	A										
Steuart Street, Seawall Lots 347N, 347S												E					A			A	A										E

Table Notes

1 This table focuses primarily on acceptable long-term uses for the sites described. The Draft Plan also allows other interim uses on Port property, which uses are not identified in this table. See Chapter 3 for a description of interim use policies.
2 Refer to Chapter 3 and Chapter 4 for General Land Use Policies and specific Development Standards which apply to the acceptable uses and sites identified in this table.
3 Definitions of land uses are included in Appendix C, Glossary of Terms.
4 An "E" indicates that the use already occurs on site and is an acceptable long-term use. The amount of space devoted to this use on each site may be expanded or contracted, if consistent with the land use objectives for the area.
5 The table identifies acceptable maritime and maritime support activities best suited for the sites in this area. However, the Port Commission retains the authority to use Port sites for any maritime uses.
6 Unless otherwise indicated, an "E" for General Office on pile supported structures reflects existing general offices in pierhead or bulkhead buildings, which are acceptable long-term uses. An "E/I" indicates existing general office uses in structures on the pier deck, which are allowed as interim uses pursuant to the interim use policies in Chapter 3.

SOUTH BEACH / CHINA BASIN WATERFRONT ACCEPTABLE LAND USE TABLE (1, 2, 3)

Table Notes

1 This table focuses primarily on acceptable long-term uses for the sites described. The Draft Plan also allows other interim uses on Port property, which uses are not identified in this table. See Chapter 3 for a description of interim use policies.

2 Refer to Chapter 3 and Chapter 4 for General Land Use Policies and specific Development Standards which apply to the acceptable uses and sites identified in this table.

3 Definitions of land uses are included In Appendix C, Glossary of Terms.

4 An "E" indicates that the use already occurs on site and is an acceptable long-term use. The amount of space devoted to this use on each site may be expanded or contracted, If consistent with the land use objectives for the area.

5 The table identifies acceptable maritime and maritime support activities best suited for the sites in this area. However, the Port Commission retains the authority to use Port sites for any maritime uses.

6 Unless otherwise indicated, an "E" for General Office on pile supported structures reflects existing general offices in pierhead or bulkhead buildings, which are acceptable long-term uses. An "E/I" indicates existing general office uses in structures on the pier deck, which are allowed as interim uses pursuant to the interim use policies in Chapter 3.

* Refer to discussion of the China Basin Mixed Use Opportunity Area in Chapter 4 for conditions for determining whether a ballpark is an acceptable land use.

** These sites are included in the Mission Bay Plan, but will remain in Port ownership, the acceptable land uses for these sites reflect the uses permit-

Key

A = Acceptable Use
E = Existing Acceptable Use [4]
E/I = Existing Use/May Continue As Interim Use
X = Accessory Use
E/X = Existing Accessory Use

	Maritime Uses (5)											**Open Spaces/Public**		**Residential Uses**	**Commercial Uses**											**Other Uses**					
	Cargo Shipping	Fishing Industry	Ferry and Excursion Boat	Historic Ships	Maritime Office	Maritime Support Service	Passenger Cruise Ships	Recreational Boating and	Ship Repair	Temporary and Ceremoni	Water Taxis	Open Space	Public Access	Residential	Artists/Designers	Assembly and Entertainme	General Office (6)	Hotels	Museums	Parking	Retail (includes restaurant	Recreational Enterprises	Visitor Services	Warehousing/Storage	Wholesale Trade/Promotio	Academic Institutions	Community Facilities	General Industry	Power Plant	Sports Facilities	Transportation Services
Pier 22½												A	A						A		A						E				
Pier 24, 24½											A	A	A			A			A		A										
Pier 26, 26½, 28, 28½		E	E	A	E	E		A		E	A		A		A	A	E		A	X	E	A		E/X							
Seawall Lot 328																				E											
Pier 30-32, 34			A	A	A	A	A			E	A	A	A			A			A	E/X	E	A	A	E/I	A		E				
Seawall Lot 329												E	E								A										
Seawall Lot 330														A		A		A		A	A										
Pier 36			A		A	A					A		A		A				A	X				E/X							
Pier 38			A		A	E		A	E	E	A		A		A				A	X	A			E/X	A						
Seawall Lots 331, 332, 333														E						E	E						E				
Pier 40, 40½			E		E	E		E		E	A		E						A	E/X	E			E/I							
Seawall Lot 334					E	E						A					E			E											
Seawall Lots 335, 336, Caltrans (AB 3794)					A	E						A	A	A		A	E	A	A	A	A	A		E						A*	
Pier 46B			A	A	E	E				A	A	A	A		E	A			A	A	A	A		E				E/I		A*	
Pier 62						E						A	A															E			
Pier 48, 48½, 50	E		E		E	E			E	E			E								E							E/I			
Pier 50½, 52, Facility 265						E		E				A	E				E			X	A										
Pier 54	E	E	E		E	E					E		A																		
Pier 54½	E				A	E		E		E		A	A								A										
Pier 64												A	A																		
Pier 64½								E				E	E								E										
Facility 2012												A	E	E						E	E										
Seawall Lot 337 (backland to Piers 48 & 50)	E					E			E											E				E				E			
Seawall Lot 337 (wetlands)**												A																			
Portions of Seawall Lot 338 / 339**												A																			
Seawall Lot 345		E						E			A		E							E/X	E										

THE SOUTHERN WATERFRONT ACCEPTABLE LAND USE TABLE (1, 2, 3)

Key

A = Acceptable Use
E = Existing Acceptable Use [4]
E/I = Existing Use/May Continue As Interim Use
X = Accessory Use
E/X = Existing Accessory Use

	Maritime Uses (5)											Open Spaces/Public Access		Residential Uses	Commercial Uses											Other Uses					
	Cargo Shipping	Fishing Industry	Ferry and Excursion Boats	Historic Ships	Maritime Office	Maritime Support Services	Passenger Cruise Ships	Recreational Boating and Water Use	Ship Repair	Temporary and Ceremonial Berthing	Water Taxis	Open Space	Public Access	Residential	Artists/Designers	Assembly and Entertainment	General Office	Hotels	Museums	Parking	Retail (includes restaurants)	Recreational Enterprises	Visitor Services	Warehousing/Storage	Wholesale Trade/Promotion Center	Academic Institutions	Community Facilities	General Industry	Power Plant	Sports Facilities	Transportation Services
Pier 70 Mixed Use Opportunity Area (portion of Piers 68 and SWL 349)	A			A	A	A		A			A	A	A			A	A		A	X	A	A		A	A	A	A	A			
Pier 70 Maritime Area (Pier 70, portion of Pier 68 and SWL 349)	A			A	E	E			E	E					E/I	E/I	E/I							E/I		A		E/I			
Warm Water Cove / Pier 72								A				E	E								X										
Western Pacific Mixed Use Opportunity Area	A				A	A							A		A		A			A	A			A	A			A			
Pier 80	E				E	E				E							E/I				E/X			E/I				E/I			
Seawall Lot 354, 354.1, Pier 84	A					A							A	A										E				E			
Islais Creek	A			A		A		A				E	E																		
Pier 90-92 and portion of SWL 344	E		A		A	E				E	A													E/I			E	E/I			
SWL 344.1, Cargo Way Mixed Use Opportunity Area (portion of SWL 344)	A				A	A						A	A				E			A	A			E	A		A	E	A		
Pier 94-96 Maritime Area (SWL 352 and portion of SWL 344)	E				E	E				E		E/I*									E/X										
Intermodel Container Transfer Facility	E				A	E																		E/I				E/I			
Pier 98												E	E							X			A								
India Basin (paper streets)												E	E																		
AB 4827, Parcels 1 & 2																												E			
AB 4845, Parcel 2																								E				E			
AB 4852, Parcel 1																				A				E				E			
AB 4917, Parcel 2																				E				A				A			
AB 4935, Parcel 2																				E				A				A			

Table Notes

1 This table focuses primarily on acceptable long-term uses for the sites described. The Draft Plan also allows other interim uses on Port property, which uses are not identified in this table. See Chapter 3 for a description of interim use policies.

Standards which apply to the acceptable uses and sites identified in this table.

5 The table identifies acceptable maritime and maritime support activities best suited for the sites in this area. However, the Port Commission retains the authority to use Port sites for any maritime uses.

APPENDIX D: ASSUMPTIONS USED IN DEVELOPMENT OF EIR ALTERNATIVES

REGULATORY CONTEXT

The authority exercised by various agencies at the local, regional, State and federal level will determine both the type and intensity of the ultimate use and development of Port property. A range of assumptions as to how these agencies might exercise their regulatory authority in the future were incorporated into the Alternatives in order to highlight differences between the potential impacts associated with corresponding development outcomes. The regulatory context for waterfront development is explained in greater detail in Section IV.A., Public Plans, Policies and Regulatory Agencies. However, a brief explanation of the key regulatory agencies and the ways in which their regulatory requirements may vary (and/or the ways in which development would vary with respect to regulatory requirements) is necessary in order to understand the assumptions underlying the Alternatives.

State Lands Commission

Focus of Development in Relation to the Public Trust

The Port of San Francisco's fundamental responsibility is to manage its jurisdictional property in service of the public trust. This section outlines the public trust concept and describes the key assumptions that were made to develop the EIR Alternatives.

Most of the Port's property was at one time tide and submerged lands (tidelands), and although much of this property has been filled, it retains a unique character. The State of California received title to these lands upon its admission to the Union, by virtue of its sovereignty. However, unlike other lands which the State holds in a proprietary capacity, tidelands are held in trust for the public. The City and County of San Francisco, acting through the Port Commission, assumed responsibility as trustee for these lands from the State under legislation commonly referred to as the Burton Act, adopted in 1968. The State Lands Commission has direct jurisdiction over public trust lands not transferred to local trustees. The State Lands Commission has authority to review leases for public trust compliance on property transferred to the Port if the lessee wants assurance that the State would honor the lease if the trust grant were revoked. State legislation also requires Commission approval of minor exchange of trust lands. The

Commission provides advice on request as to whether a particular use comports with trust use restrictions. The Attorney General's office is responsible for enforcing the terms of the trust grant (Burton Act).

The courts have recognized the special character of tidelands and have determined that these lands are subject to protective use restrictions to enhance and preserve their public utility. Use of the lands held in trust is restricted to those uses that serve the public interests and rights relative to the waterways. Based on a series of court decisions, these interests and rights can be interpreted as including:

- Navigation;
- Water-borne commerce and uses that support or stimulate such commerce;
- Fishing;
- Water-related recreation;
- Natural resource protection; and
- Promotion of public enjoyment of trust property.

Among the uses that have been determined to be consistent with the trust are: all water-dependent uses; parking that is accessory to a water-related use; hotels; conference facilities; retail and restaurant uses that promote enjoyment of the trust property or are incidental to a water-related use; and offices where the main purpose is water-related. Among the uses that have been determined to be inconsistent with the trust are residential, general office uses, and private athletic clubs.[1,2,3,4]

Non-trust uses can occur on trust lands under special circumstances. First, non-trust uses may be permitted on a short-term basis or incidental to a primary trust use if necessary to promote public interest objectives. An example would be general office uses on short-term leases in surplus space in buildings constructed to serve maritime office needs (e.g., the Ferry Building). Second, non-trust uses may be permitted under long-term leases up to 66 years on filled lands determined to be surplus to the needs of the trust (e.g., Delancey Street residential development in South Beach). Third, trust property, if filled and determined to be surplus to the needs of the trust, can be exchanged for non-trust property to which the trust designation would be transferred (i.e., Mission Bay land exchange, where land determined to be surplus to the trust would be transferred to Catellus Development Corporation for the construction of housing and other uses in Mission Bay, in exchange for land to be transferred to the City and County from Catellus adjacent to Pier 80 [the "Western Pacific railyard" site]). Under any of these circumstances, revenue received is restricted to use for public trust purposes.

For the development of the EIR Alternatives, the achievement of public trust objectives at the Port of San Francisco was considered to include all of the following:

- The ability to maintain and develop maritime commerce which includes commercial fishing, fish processing and related uses; cargo shipping; transient vessel berthing; marine related suppliers, engineers, insurers, fueling, maintenance, transportation, storage and other support uses; foreign trade zone; trade advisory groups; recreational boat storage, boat clubs, marinas, launching and repair; ship repair facilities.
- The ability to promote waterway navigation, including ferry, water taxi and excursion boat operations; cruise terminal; tug and tow operations; bar pilots; dredging.
- The ability to promote and create places that facilitate the complete public use and enjoyment of the property, including historic ship berths and interpretative areas; restaurants; parking; museums; community facilities; hotels; fishing piers; transportation and visitor services; assembly and entertainment facilities.
- The ability to protect and foster natural resources, including wetlands identification and restoration; shoreline access improvements and landscaping; park and promenade improvements; access and open space maintenance; waste oil recycling facilities; oil spill response systems.

Under the **No Project Alternative,** the Port would still attempt to achieve public trust objectives, but in the absence of consensus or a comprehensive approach (because there would be no Waterfront Land Use Plan). As a result, the extent and types of development that would occur vould be most like the mix of uses currently existing. Development that did occur would be nore likely to be interim rather than long-term uses because of the assumed difficulty of chieving consensus on major new developments in the absence of an overall plan for the Port interim uses are discussed under "Regulatory Context" in this Appendix). The resulting failure o generate substantial new sources of revenue was assumed to limit efforts to maximize public rust objectives without other public subsidies. Public subsidies from non-Port sources were not onsidered likely because federal and State funds have been reduced in recent years, and local ompetition for tax revenues and bonding capacity is intense. Development of seawall lots ould not be coordinated with waterside development, reflecting the existing pattern. Some eawall lots could be declared "surplus to trust" in order to achieve the desired uses, and generate evenue for trust uses.

nder **Alternative A**, the Port would attempt to achieve public trust objectives, but would accept mitations that would make attainment of some public trust objectives financially infeasible. As result, the focus of development would be more on "adaptive reuse" than wholesale change to isting structures. Commercial recreation and assembly/entertainment uses would be less intensive, attracting fewer visitors to the waterfront, than assumed for **Alternative B**. Some seawall lots would likely be declared "surplus to trust" in order to achieve the desired uses, and generate revenue for trust uses.

Under **Alternative B**, it is assumed that the Port would be most likely to generate sufficient revenues to be able to maximize public trust objectives on the waterside, including maritime, public access, and people attracting uses. Per Waterfront Land Use Plan objectives, development of seawall lots would be coordinated with waterside development. Intensive seawall lot development would help foster the feasibility of improvements on piers to serve new water-oriented uses. Small amounts of non-trust uses (such as office uses in bulkhead buildings) might occur as part of an overall development that meets trust objectives. Some seawall lots would likely be declared "surplus to trust" in order to allow a range of development that could generate revenues for public trust uses.

The Burton Act and Interim Uses

In adopting the Burton Act, which transferred responsibility to the Port for management of the trust lands, the State Legislature established rules for use of the property. The State Attorney General is charged with enforcing the Burton Act. In the Burton Act, the legislature identified many of the public trust uses that the Port could establish on the property. In addition, the legislature provided that if the Port Commission determined that land or facilities were not required for trust purposes, then the property could be leased "for purposes of such development and use as the commission finds to be in the public interest, with moneys derived therefrom to be used by the Commission in furtherance of Commerce and Navigation." (Burton Act, Sec. 3, Subsect. 6)

Typically, leases for interim uses on Port properties subject to the public trust are for five years or less. Where an interim use of longer than five years is proposed, the State Lands Commission might require evidence that the property is surplus to the public trust for the interim period, or that the use is incidental to an overall program of harbor improvements. Under the **No Project Alternative** it was assumed that any non-trust related uses, such as general office or warehousing uses, would be permitted only on a short-term basis (with leases no greater than five years) because the lack of an updated comprehensive plan would hinder the Port in exercising judgment about the need for those facilities for trust purposes over a longer term. Under both **Alternative A** and **Alternative B** the longer interim use terms proposed by the Waterfront Plan would be authorized by the Port Commission. **Alternative A** would reflect a lesser ability to establish public trust related uses, which could be due to low market demand or the lack of necessary subsidies. Thus, to fill surplus property more non-trust uses would occur for interim terms ranging from 5 to 30 years, depending on location. It is assumed that the State Lands Commission would concur with the Port Commission's determination that these properties were surplus to trust needs for these interim time periods. Under **Alternative B** it is assumed that market demand and financial resources would be available to use the property in a way that maximized trust objectives, eliminating the need for interim non-trust uses.

Proposition H

Proposition H is described in Section II.D. Under the **No Project Alternative**, in order to compare the base case impacts associated with land use and development possible under existing plans and policies with the potential impacts under the Waterfront Land Use Plan, the Proposition H moratorium on most new non-maritime development was assumed to have terminated. Under **Alternative A** and **Alternative B**, the moratorium would be terminated upon completion of the WLUP in conformance with Proposition H.

BCDC Policies and Requirements

BCDC plans, policies and regulations are extremely important determinants of the ultimate use of Port property within BCDC jurisdiction. The McAteer-Petris Act requires any person "wishing to place fill, to extract materials, or to make any substantial change in use of any water, land or structure" to obtain a permit from BCDC if the development is "within the area of the Commission's jurisdiction."[5] BCDC has two types of jurisdiction.

The **shoreline band jurisdiction** covers a 100-foot band abutting the Bay shoreline. Within the shoreline band, if a parcel has not been designated for water-oriented priority land uses, BCDC's permitting authority is limited to ensuring that new development provides maximum feasible public access.

The **Bay jurisdiction** covers facilities on or over the Bay itself. BCDC has use permit authority over "further filling" of the Bay, and must apply strict criteria in reviewing proposed development, including the requirement that the project be "water-oriented" and that there be "no alternative upland location . . . available for such purpose."[6,7]

BCDC interpretation and a 1970 Attorney General opinion have concluded that proposed development that involves no, or routine repairs to an existing pier or its substructure would fall within BCDC's "shoreline band jurisdiction."[8] This means that the new use would not have to be a water-oriented use. Proposed development that involves the complete removal and replacement of a pier would fall within BCDC "bay jurisdiction" and thus be subject to the water-oriented requirement.[8]

Pier replacement would also be subject to "replacement fill policies" adopted by BCDC as part of the San Francisco Bay Plan. If a pier deteriorates or becomes technologically obsolete for commercial shipping or other maritime purposes, it can be removed and replaced with "replacement fill" if 1) the replacement fill would cover an area smaller than the area of the pier being removed, and 2) no more than 50 percent of the area being removed would be used as water-oriented commercial recreation or water-oriented public assembly, and the remainder would be used for public recreation, open space, or public access (includes open water).

An informal Attorney General opinion issued in 1986 states that projects that would involve more than routine, minor repairs to a pier or substructure (but less than full replacement of a pier, or replacement of all or a substantial part of a pier deck) would be subject to a case-by-case review. If the work extends "to all or substantial portions of the pier," alters the capabilities of the pier, or involves significant structural changes to support a new use, it may tend "toward creation of what is essentially a new structure, . . . one that is significantly different from what existed prior to the work," and thus be more like pier replacement (triggering the replacement fill policies discussed previously.[7]

The 1986 informal Attorney General opinion also states that non-water-oriented uses that are incidental or secondary to the primary, water-oriented use (and intended to help finance the water-oriented use) would not be allowed under the McAteer-Petris Act. However, uses on a pier that are interrelated with the water-oriented use (such as office space for the water-oriented use) may themselves be considered water-oriented.[7]

Other relevant BCDC policies include:

- The 1970 Attorney General opinion viewed extraction of materials (such as a pier) from the Bay as a separate act from "the subsequent act of placing new materials in the Bay in the form of a replacement pier."[8] Given this context, there is no "fill credit" policy or theory of equivalency whereby new, non water-oriented development opportunities would be allowed in exchange for removal of deteriorated piers. However, under replacement fill policies, piers could be removed and replaced with a reconfigured footprint within specified areas as part of a single project, provided the new use was water-oriented.

- Parking within Bay jurisdiction is restricted to the minimum amount necessary to support permitted commercial recreation activities. Parking must first be provided at any available upland location.

- BCDC, under the Seaport Plan, typically has limited uses that are not consistent with the Port priority use policies to terms of five years or less. Any such uses would also be subject to BCDC's "Bay" jurisdiction policies if fill were required.

Under the **No Project Alternative,** all development would reflect existing BCDC requirements relating to shoreline and Bay jurisdiction, replacement fill, parking, and interim uses.

Under **Alternative A,** it was assumed that BCDC plans and policies would be amended to allow the land uses permitted in the Waterfront Land Use Plan. However, as under current rules, those uses on piers that BCDC does not consider water-oriented, such as maritime office or general warehousing, would only be permitted as long as the pier fell within BCDC's shoreline jurisdiction and not the Bay jurisdiction. This requires one to assume either that (1) those piers would not require substantial rehabilitation, or (2) that a new policy was adopted that allowed repairs necessary to accommodate "interim" non-water oriented uses north of China Basin for a 5- to 10-year period and for a 1- to 10-year period, with exceptions for 20- to 30-year leases, south of China Basin, as contemplated in the Waterfront Land Use Plan.

Alternative A is intended to reflect an adaptive reuse approach in order to highlight the impacts associated with a high proportion of interim uses, to enable decision-makers to establish appropriate controls or mitigation measures. It is also assumed that BCDC would establish public access requirements for interim uses that would be less expensive than those for new permanent development improvements, for example, by not requiring substantial permanent mprovements to the pier structure. It was assumed that BCDC's *Seaport Plan* policy regarding nterim uses is modified to permit longer-term interim leases in areas designated for port priority use south of China Basin where longer terms are necessary to amortize needed improvements to he facility.

Permanent uses contemplated for pile supported structures in the Waterfront Land Use Plan would be assumed to be subject to existing replacement fill policies, limiting water-oriented ommercial recreation uses to 50 percent of the rebuilt or substantially rehabilitated structure.

Under **Alternative B**, the replacement fill policies would be revised to allow development of commercial recreation uses on more than 50 percent of the pier area being removed, at least at some locations. BCDC rules would change to allow all uses consistent with the public trust on existing piers, such as maritime office, notwithstanding that substantial repairs to the pier may be necessary to meet building code and seismic safety requirements. A "historic preservation exemption" to the water-oriented use requirement currently applied by BCDC to the Ferry Building would be extended to bulkhead and pierhead buildings. In addition, as under **Alternative A**, uses that BCDC would not consider water-oriented would be permitted on some existing piers for interim terms. Again, this requires one to assume either that (1) those piers would not require substantial rehabilitation, or (2) that a new policy was adopted that allowed repairs necessary to accommodate "interim" non-water oriented uses north of China Basin for a 5- to 10-year period and for a 1- to 10-year period, with exceptions for 20- to 30-year leases, south of China Basin, as contemplated in the Waterfront Land Use Plan. It is assumed that BCDC would distinguish between interim and permanent uses when determining what would satisfy the maximum feasible public access requirements.

Cruise Ship Regulations

The Passenger Service Act of 1886 prohibits "foreign flag vessels" (those built, owned, or staffed from outside the United States) from carrying passengers one-way between United States ports. Passengers taken between United States ports on a foreign-flag vessel must embark and disembark at the same port, and a foreign port-of-call must be made. Because almost all of the passenger cruise vessels are foreign-flag, one-way cruises between San Francisco and popular cruise destinations such as Alaska are prohibited. This prohibition places San Francisco at a competitive disadvantage compared to other West Coast ports because of San Francisco's greater distance from Alaska (and other destinations along the U.S. Coast) compared to Seattle or Los Angeles, respectively, which requires longer cruises at a time when the industry trend is toward shorter cruises.[9]

Under the **No Project Alternative** and **Alternative A,** it is assumed that the Passenger Service Act is not changed, and that San Francisco is not able to improve its position in the cruise market. Under **Alternative B,** it is assumed that the Passenger Service Act is changed, and that San Francisco would be able to market one-way trips to Alaska and accommodate foreign-flag vessels making multiple stops along the California coast, resulting in more cruise ship activity.

San Francisco Planning Code

Development under the **No Project Alternative** would comply with all current Code requirements. Development under **Alternative A** and **Alternative B** would require that the code be amended to address the issues identified in Proposed Planning Code Amendments in Chapter III, Project Description.

GROWTH IN CARGO OPERATIONS AND SEAPORT PLAN UPDATE

Seaport Plan Update

Each of the EIR Alternatives reflects certain assumptions regarding the growth of cargo shipping (including supporting uses) at the Port of San Francisco. The assumptions relate specifically to the *San Francisco Bay Area Seaport Plan*, developed for the Metropolitan Transportation Commission (MTC) and the BCDC. The *Seaport Plan* was developed in 1982 and revised in 1988; it was recently updated (the update was approved by BCDC in April 1996). Bay Area cargo facilities were the subject of recent Seaport Planning Advisory Committee (SPAC) analysis as BCDC was considering the update of the *Seaport Plan*. The EIR analysis relied upon preliminary conclusions presented in BCDC staff reports to the SPAC that are summarized below as they relate to San Francisco's cargo facilities in particular.

The *Seaport Plan* "designates certain lands referred to as *port priority use areas* around San Francisco Bay for receiving and sending waterborne cargo in ocean-going ships" (emphasis in original text). Port priority use areas include marine terminals and directly related ancillary activities. The *Seaport Plan* also designates specific sites as *marine terminals* (facilities used for he receipt or shipment of waterborne cargo). The marine terminal designations are based on egional cargo forecasts and an analysis of the "throughput capability" of existing facilities.[10]

The regional cargo forecasts projected flows of five categories of cargo through 2020. The orecasts were developed in 1988; based on later reviews, the SPAC determined that the orecasts were still reliable for planning purposes, and therefore, did not need to be revised for he pending update to the *Seaport Plan*.[10] The following Table 1 presents the regional forecasts f cargo for 2010 (the analysis year used in this EIR) and 2020 (the horizon year for the Seaport lan update).

TABLE 1: SUMMARY OF 1988 REGIONAL CARGO FORECASTS DEVELOPED FOR SEAPORT PLAN, 2010/a/

Type of Cargo	1990/b/	2010/c/	2020
Container	7,773	22,227	32,567
Break Bulk	291	770	1,146
Neo-Bulk	1,136	1,718	2,217
Dry Bulk	2,414	4,727	5,988
Liquid Bulk	522	800	983
Total	12,136	30,242	42,901

/a/ Expressed in thousands of metric tons.
/b/ Forecast.
/c/ The forecasts are presented (in the analyses for the Seaport Plan update) in five-year increments through 2020. The 2010 forecasts are shown here because they correspond to the EIR analysis year.

SOURCE: Future Marine Terminal Requirements: Proposed Approach for the 1994 Update of the Seaport Plan, BCDC, May 1994.

The projections indicate that the largest increases in cargo will occur in the categories of container cargo (about a 185 percent increase from 1990 to 2010) and break bulk (about a 165 percent increase).

The analysis of marine terminal capability involves estimating the capability of six components of maritime operations (ship size and frequency, ship/apron transfer, apron/storage transfer, storage/inland transfer, storage capability, and gate processing). Capabilities of each component were estimated for each marine terminal, based on the type(s) of cargo processed or expected to be processed at the terminal. The maximum capability of the terminal was considered to be equal to the total amount of cargo that could be processed at the most constricted component. The capabilities were estimated using standardized formulae and assumptions for each of the five types of cargo, and information supplied by port staffs.[10]

The estimated year 2020 capabilities of the facilities considered to be existing or future marine terminals at the Port of San Francisco analyzed by the SPAC during the *Seaport Plan* update process are presented in Table 2 on the following page. For most of the terminals, storage was found to be the limiting component.

TABLE 2: ESTIMATED CAPABILITIES OF EXISTING MARINE TERMINALS, PORT OF SAN FRANCISCO

Cargo Type and Pier	Units	Preliminary Estimate - Year 2020 Capability/a/	Draft Seaport Plan Estimate Year 2020 Capability/b/	1994-1995 Current Throughput
Container	TEUs/c/			
Pier 80		155,664	137,633	0
Pier 94-96		180,000	206,450	54,988
Pier 94-North (assumed future terminal)			68,817	N/A
Subtotal		335,664 (3,653,367 metric tons)	412,900 (4,494,000 metric tons)	54,988 (598,489 metric tons)
Break Bulk	Metric tons			
Pier 50		207,421	312,000	0
Piers 68-70		241,992	156,000	0
Pier 80/d/		40,305	Not in SP	0
Pier 94-96				24,651/e/
Subtotal		490,305	468,000	24,651/e/
Neo-Bulk	Metric tons			
Pier 27-29		292,366	Not in SP	45,690
Pier 48		118,526	206,000	0
Pier 94-96				12,821
Subtotal		410,892	206,000	58,511
Dry Bulk	Metric tons			
Pier 90		2,062,365	1,219,000	0
Pier 92		131,653		10,499
Subtotal		2,194,018	1,219,000	10,499
Liquid Bulk	Metric tons			
Pier 92		23,626	118,000	43,791

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a/ Future Marine Terminal Requirements: Proposed Approach for the 1994 Update of the Seaport Plan, BCDC, May 1994. Capabilities are estimated based on limiting component of throughput.

b/ Source: Draft San Francisco Bay Area Seaport Plan, February 16, 1996.

c/ Twenty-foot-equivalent units, each assumed to be equal to about 12 short tons of cargo.

d/ Assumes only six percent of terminal capability is used for break bulk; remainder is assumed to be used for container cargo.

e/ Metric revenue tons.

OURCE: Port of San Francisco Billing Information System; fiscal year 1994-1995.

t should be noted that existing marine terminals are not necessarily improved facilities that are ctive or in use; some of the marine terminals include vacant and unused wharves and backland reas that, given capital improvements, may be put to use as a marine terminal. The *Seaport lan* does not consider the economic feasibility of constructing the capital improvements ecessary to create, say, a break-bulk terminal in a location where no such activity exists or where substantial repairs would be needed to accommodate a marine terminal. The general assumption is that the projected increased demand for cargo throughput will make construction of terminal improvements feasible.

To determine the number of marine terminal berths needed to meet the regional cargo forecasts, the SPAC added the estimates of capability at each existing facility to determine the total capability of each port for each type of cargo. The total capability was divided by the total number of berths to reach an average capability per berth for each port. The cargo forecasts were then compared with the average capabilities to determine the total number of berths needed to serve each type of cargo. For example, based on this analysis it is estimated that 24 additional berths at Bay Area ports will need to be reserved to accommodate forecast container cargo in 2020.[10,11,12] (Estimated requirements for 2020 are presented because the *Seaport Plan* analyses do not present results for 2010.)

BCDC adopted a revised *Seaport Plan* on April 18, 1996 that deletes marine terminal and port priority use designations for areas not needed to satisfy regional cargo throughput demands for 2020, as shown in Table 3. The port priority use designation will be retained on 120 acres for the Port's three existing container berths at Piers 94-96 and for one future container berth at Pier 94N; retained at Piers 90 and 92 for liquid and dry bulk berths; retained on two container berths at Pier 80; deleted on backland between Piers 70 and 80, including the Western Pacific Ferry Slip; retained on two break bulk berths at Pier 70; deleted on Pier 52 through Pier 54, per the Mission Bay Development Agreement; deleted on backland between Pier 52 and Pier 68, per the Mission Bay Development Agreement; retained on four break bulk berths at Pier 50 and retained on two neo-bulk berths at Pier 48. In sum, port priority use area at the Port of San Francisco will encompass sufficient wharf and backland area to sustain six container berths, six break bulk berths, two neo-bulk berths, and two bulk berths to meet cargo industry growth forecasts through the year 2020.[13]

Marine terminal and port priority use designations may be reconsidered after a BCDC study of bulk cargo is completed, and after community reuse plans are completed for Hunters Point Naval Shipyard and Alameda Naval Air Station. The existing and recommended 2020 tonnage capabilities by type of cargo are shown in Table 3.[10,11,12]

Port of San Francisco Market, Economic, and Facility-Specific Factors

Although the capability analyses conducted for the *Seaport Plan* update were utilized in assumptions made for this EIR, certain market, economic, physical and locational factors specific to San Francisco will also determine whether the projected cargo throughput levels will be realized, such as:

- San Francisco is currently two days by rail from Oakland, because the rail carrier waits until a sufficient amount of cargo has accumulated before bringing a train to the facility. It is therefore less expensive for carriers to pick up and deliver cargo in Oakland;
- San Francisco is served by only one railroad, and shipping companies prefer to locate where two or more rail companies operate (in order to get competitive rates);
- Other West Coast ports have faster intermodal connections than San Francisco and other Bay Area ports to local and midwest markets;
- The federal government's recent transfer of land at the Oakland Naval Supply Center to the Port of Oakland gives that port more capability to expand;
- The future closure of Bay Area military bases could make more land available for cargo facilities,and thus more options for developing marine terminals;
- Recent trends toward increased efficiency and cost effectiveness have resulted in large and small carriers formalizing agreements or merging, effectively reducing the number (but increasing the stakes) of business opportunities for West Coast ports;
- The principal liquid bulk commodities are petroleum products handled by proprietary facilities with refineries, rather than publicly-operated ports;
- Grain exports, a primary dry bulk cargo, are being hauled mainly at ports near agricultural areas;
- Decreasing capacity at Bay Area dredge disposal sites and concerns over the environmental impacts of dredging have resulted in substantially higher dredging costs. In addition, the amount of sediment accumulation at some piers and the use of larger, deeper draft container ships would require substantial dredging to maintain the piers for ship calls; and
- Some of the Port's facilities are in poor condition, and substantial improvements would be required to accommodate maritime activity.[14,15]

TABLE 3: SUMMARY OF SAN FRANCISCO EXISTING AND RECOMMENDED 2020 TONNAGE CAPABILITY IN SEAPORT PLAN/a,b/

Type of Cargo	1994 Capability	2020 Capability/c/	2020 Capability/d/
Container	3,395	4,492	4,494
Break Bulk	467	467	468
Neo-Bulk	411	205	206
Dry Bulk	2,194	2,194	1,219
Liquid Bulk	24	24	118
Total	6,491	7,382	6,505

/a/ Expressed in thousands of metric tons.

/b/ Recommended tonnage capabilities for 2020 are presented because the most recent recommendations do not present results for 2010. Earlier analyses of 2010 requirements show a Bay Area-wide need for additional berths for container and liquid bulk cargoes, and surpluses of berths for break bulk and neo-bulk cargoes.

/c/ Capability in 2020 reflects addition of one berth and 44 acres of storage for container activity at Piers 94-96, and discontinuation of neo-bulk activity at Piers 27-29. Source: Future Marine Terminal Requirements: Proposed Approach for the 1994 Update of the Seaport Plan, BCDC, May 1994, as updated by BCDC staff November 8, 1994.

/d/ Source: Draft *San Francisco Bay Area Seaport Plan*, Feburary 16, 1996.

These considerations are important in light of the fact that, although the Port of San Francisco currently has cargo shipping capability, it has been losing shipping traffic to other ports (such as container traffic to the Port of Oakland). When market and economic factors and facility-specific concerns are taken into account, it appears that some San Francisco designated marine terminals may not be fully utilized (or may not be utilized at all) during the period analyzed in this EIR (i.e., through 2010).

As a result of some of these factors, the Port Commission decided on February 28, 1995 to withdraw grant applications that had been submitted for construction of improvements to two Southern Pacific railroad tunnels. The improvements would have allowed transport of double-stacked, "high cube" containers by rail from the Port of San Francisco. The Port Commission made their decision after considering the conclusion that, due to the Port's competitive disadvantages, ". . . the tunnel project no longer has the ability to bring, or retain, substantial volumes of containerized cargo to the Port of San Francisco."[14,16]

Assumptions for EIR Alternatives

Under the **No Project Alternative** and **Alternative A,** it is assumed that the *Seaport Plan* is updated and changes to the port priority use area and marine terminal designations are made, but the marine terminal capability in San Francisco assumed by BCDC is not fully utilized, either because the regional cargo forecasts are not realized, or the forecasts are realized but the Port of San Francisco does not capture much of the increase due to the competitive disadvantages cited above or other reasons. These two Alternatives assume that no additional shipping facilities would be needed within the Waterfront Land Use Plan Project Area. Under the **No Project Alternative**, many maritime facilities would remain vacant or underutilized. Under **Alternative A**, interim uses (as allowed by the Waterfront Land Use Plan and the *Seaport Plan*) could occur in vacant or underutilized port priority use areas. Shipping activity levels would be similar to recent activity levels at the Port of San Francisco. If the actual level of maritime activity in 2010 were lower than assumed in this EIR, and/or if actual maritime activity occurred at fewer locations than assumed, the impacts would be less than identified in this EIR.

For **Alternative B,** it is assumed that 1) the *Seaport Plan* is updated and changes to the port priority use area and marine terminal designations are made; 2) there are increases in regional cargo similar to those forecast in the *Seaport Plan*; and 3) the marine terminals designated in the updated *Seaport Plan* are all fully utilized. **Alternative B** assumes the full use of all designated marine terminals so as to provide a most intensive use environmental analysis that is generally consistent with regional seaport planning efforts.

In **Alternative B**, the levels of activity and mix of cargo served at each of the marine terminals are based partly on the *Seaport Plan* throughput capability analyses, partly on constraints on capability not considered in the *Seaport Plan* analyses (such as the existence of ship repair operations at some designated marine terminals), and partly on more detailed assessments prepared for the Port of San Francisco by Vickerman Zachary Miller (VZM).[17,18]

The *Seaport Plan* throughput capability estimates used for **Alternative B** were those developed n 1994, based on a level of shipping of 6,772,000 metric tons of various types of cargo. In 996, the throughput numbers were revised to total 6,505,000 metric tons for 2020. As the EIR used the higher number, and assumed that the 2020 capabilities would be utilized by 2010, **Alternative B** reflects a greater impacts analysis scenario.

The VZM assessments consider facility-specific factors that influence capability and likely utilization. The VZM analysis concludes that the entire level of container activity "allocated" to the Port of San Francisco in reports prepared for the *Seaport Plan* update could be handled at Piers 94-96, if the acreage recommended by BCDC were added to the facility to increase container storage area. VZM also believes that the operation of one consolidated facility is more likely (from an economic standpoint) than the operation of both Pier 80 and Piers 94-96 as separate facilities (as assumed in the Seaport Plan). For these reasons, **Alternative B** assumes that the 4,494,000 metric tons of container activity (equal to 413,000 TEUs), recommended in the *Seaport Plan* as total 2020 capability, could be handled solely at Piers 94-96. (As noted in Table III.3, the most recent Seaport Plan analyses do not include recommended capabilities for 2010. Previous analyses indicate that Bay Area ports would need additional container berths by 2010. Therefore, this EIR assumes that Piers 94-96, with one additional berth, are fully utilized by 2010.)

Alternative B further assumes that the unused capability of the container facilities (all of Pier 80, or possibly, portions of Piers 80 and 94-96) would be fully utilized for bulk cargoes. Although this assumption raises the level of bulk activity above that assumed in the *Seaport Plan* analyses (and to a level that may not realistically occur), the assumption was considered appropriate because it allows the EIR to show the impacts of all designated maritime terminals in full use.

ECONOMIC ASSUMPTIONS

There is essentially one underlying economic scenario for the Waterfront Land Use Plan EIR. As noted in discussions of the cumulative context of Waterfront Land Use Plan development (see for example, Section V.C., Housing, Population, and Employment, and Appendix E, Future Context and Projections), it is the scenario illustrated by ABAG's *Projections '94* forecasts for population and job growth in the Bay Area from 1995 through the year 2010. In order to illustrate a range of potential activity along the waterfront, however, a few key economic factors are assumed to vary among the Alternatives. The result of that variation is the difference in the share of local and regional economic activity captured on Port property. For **Alternative A** and particularly for **Alternative B**, because certain sites would be available for development and regulatory factors are assumed to change (see the previous discussion in this section), or competitive factors influencing trade and the distribution of cargo would be different, the Waterfront Land Use Plan Project Area would capture more of most types of economic activity from the rest of the City and region than would be the case in the **No Project Alternative**.

Under the **No Project Alternative,** it is assumed that the waterfront's share of economic activity in the City and region remains constant or decreases (due in part to deteriorating facilities and limits on pier renovation under current regulations) over time. Under **Alternative A,** it is assumed that the waterfront's share of economic activity in the City and region increases over time; the emphasis of development is on interim industrial uses, public trust uses and local-serving activity through adaptive reuse of existing piers and buildings; and the amount of increased activity and development is relatively modest. Under **Alternative B,** it is assumed that the waterfront's share of economic activity in the City and region also increases over time, but that the emphasis of development is on visitor (resident, worker, and tourist) attractions such as assembly, entertainment, retail and recreation uses, and industrial and non-industrial maritime uses. **Alternative B** also represents a maximum reasonable amount of future maritime and non-maritime activity and development. While **Alternative B** assumes a greater shift in the waterfront's share of City and regional economic activity than **Alternative A**, the size of the shift is still very limited relative to total existing and expected increases in City and regional activity to 2010.

RELATIONSHIP TO AFFECTED PLANS

The relationship of the Draft Waterfront Land Use Plan and EIR Alternatives to other plans is discussed in more detail in Section V.A., Plans and Policies Comparison. Assumptions regarding the relationship of the EIR Alternatives to the *Seaport Plan* update are discussed previously in this section.

San Francisco Master Plan

Under the **No Project Alternative**, development would generally reflect the existing Master Plan. Changes to the Master Plan might be required to bring it up to date and make it consistent with other current policies or provisions. Changes might also be required to reconcile the Planning Code and Zoning Maps.

Under both **Alternative A** and **Alternative B**, the Waterfront Land Use Plan would be revised and refined and the Master Plan would be amended to achieve consistency with Citywide policies in the Master Plan. Portions of the Master Plan would be amended to correct outdated information and reconcile Master Plan designations with Planning Code requirements.

Mission Bay Plan

The Mission Bay project area covers 313 acres owned mostly by Catellus Development Corporation, and is located about one mile south of San Francisco's Financial District, on both the north and south sides of China Basin Channel. The Mission Bay project area includes approximately 39 acres of Port property, 14.8 acres of which (the "Mission Bay parcels") were acquired by Catellus under the terms of the Mission Bay Development Agreement between the City and Catellus. The *Mission Bay Plan*, adopted September 27, 1990 by the City Planning Commission as Part 2 of the Central Waterfront Plan of the San Francisco Master Plan, provides a comprehensive set of plans, policies, guidelines, and implementation measures ensuring the orderly development of Mission Bay.

The *Mission Bay Plan* calls for construction of 8,270 new housing units, 4.8 million square feet of office space, 0.9 million square feet of commercial-light industrial space, 0.75 million square feet of retail space, and a 500-room hotel, and provides 67.9 acres of public open space and parks and 14.6 acres for public facilities. The implementation provisions of the *Mission Bay Plan* include sequencing and linkage requirements for the development program. Among the requirements are a link between office or commercial-light industrial development and housing development, and between housing development and provision of open space.[19,20,21,22]

The Mission Bay Development Agreement expired at the end of 1995 and Catellus has indicated that it will not renew (i,e., will terminate) the Agreement. The Mission Bay Special Area Plan, Planning Code, and Zoning Map provisions remain in effect. Catellus is considering development consisting of 2,000 housing units and 350,000 square feet of retail space on a portion of the Mission Bay area north of China Basin Channel that had been designated for office use in the Mission Bay Plan. This new proposal is analyzed as Variant 4 in Chapter VII of this EIR, a variant to all Alternatives. At this time, the effects of terminating the Development Agreement are not known with respect to the overall Mission Bay Program and related agreements (e.g., wetlands development, land exchange with the Port, buildout south of China Basin Channel, etc.). Nevertheless, for purposes of providing a conservative impacts analysis, certain assumptions regarding development buildout of Mission Bay have been incorporated into this EIR, as detailed below.

Little development in the Mission Bay area has occurred since approval of the *Mission Bay Plan*. Under the **No Project Alternative** and **Alternative A,** it is assumed that some development will have occurred in the area by 2010 (according to the *Mission Bay Plan*), but less than originally estimated in the Mission Bay EIR. Under **Alternative B,** it is assumed that development according to the *Mission Bay Plan* will have occurred at the pace envisioned in the EIR.

When paired with the requirements for sequencing and linkage, these assumptions have implications for the two "Mission Bay parcels" within the Waterfront Land Use Plan Project Area. Under the **No Project Alternative** and **Alternative A,** it is assumed that Catellus will not have established a wetlands park on the Mission Bay parcels at the mouth of China Basin Channel; under **Alternative B,** it is assumed that the wetlands will have been established by 2010. Under the **No Project Alternative** and **Alternative A**, it is assumed that existing uses on the site would continue, or that the site would become partially vacant. Similarly, under the **No Project Alternative** and **Alternative A**, it is assumed that Catellus will not have exercised its lease option on the Mission Bay parcel along Terry A. Francois Boulevard; under **Alternative B**, it is assumed that open space will have been provided on that parcel by 2010. Under the **No Project Alternative** and **Alternative A**, it is assumed that the parcel would be used for general industrial and maritime-related uses.

For purposes of this EIR, these assumptions would carry through to the variants of the **No Project Alternative, Alternative A** and **Alternative B** (see "Variants on Alternatives in Chapter III, Project Description, and Chapter VII, Variants to the Alternatives). The main purpose of the variants analysis in this EIR is to explore the potential local and cumulative implications of possible major changes in land use.

NOTES - Assumptions Used in Development of EIR Alternatives

1 Saggese, Nancy Alvarado, Deputy Attorney General, Office of the Attorney General, Los Angeles, Memorandum to N. Gregory Taylor, Assistant Attorney General, "Commercial Office Building Use of Tidelands," December 1, 1982.

2 Eagan, Dennis M., Deputy Attorney General, for John K. Van De Kamp, Attorney General, State of California Department of Justice, letter to Claire T. Dedrick, Executive Officer, State Lands Commission, "Proposed Residential Development of Burton Act Lands," September 13, 1984.

3 Sekelsky, Jane, Senior Staff Counsel, California State Lands Commission, letter to Randy S. Rossi, Planning Environmental, Regulatory Consultant, Port of San Francisco, [proposal to construct athletic club facilities on Seawall Lot 321], February 29, 1988.

4 Dedrick, Claire T., Executive Officer, California State Lands Commission, letter to Vello Kiisk, Acting Executive Director, Port of San Francisco, [proposal to construct office building on Seawall Lot 321], August 11, 1988.

5 Government Code Section 66632.

6 Government Code Sections 66605, 66610, 66611, 66632, and 66632.4.

7 Eagan, Dennis M., Deputy Attorney General, for John K. Van De Kamp, Attorney General, State of California Department of Justice, letter to Alan R. Pendleton, Executive Director, San Francisco Bay Conservation and Development Commission, "Request for Informal Opinion Concerning BCDC Jurisdiction Over Piers that Predate the Establishment of BCDC," October 8, 1986.

8 Lynch, Thomas C., Attorney General, and E. Clement Shute, Jr., Deputy, Opinion, [BCDC's authority to adopt a regulation allowing Bay fill for non-water-oriented uses], October 15, 1970.

9 Port of San Francisco, *San Francisco Cruise Passenger Terminal Assessment,* May, 1990.

10 San Francisco Bay Conservation and Development Commission, *Future Marine Terminal Requirements: Proposed Approach for the 1994 Update of the Seaport Plan*, prepared for the Seaport Planning Advisory Committee, May 3, 1994.

11 Ruffolo, Jennifer, Senior Planner, San Francisco Bay Conservation and Development Commission, Memorandum to Seaport Planning Advisory Committee, "Recommended Changes to Port Priority use and Marine Terminal Designations in the *San Francisco Bay Area Seaport Plan,*" October 28, 1994.

12 Ruffolo, Jennifer, Senior Planner, San Francisco Bay Conservation and Development Commission, Memorandum to Seaport Planning Advisory Committee, "Addendum to Staff Report on Recommended Changes to Port Priority use and Marine Terminal Designations in the *San Francisco Bay Area Seaport Plan,*" November 8, 1994.

13 Draft *San Francisco Bay Area Seaport Plan*, A Report to the San Francisco Bay Conservation and Development Commission and the Metropolitan Transportation Commission, February 16, 1996.

14 Zachary, J. Michael, Senior Vice President, Vickerman Zachary Miller, letter to Dennis P. Bouey, Executive Director, Port of San Francisco, "San Francisco Tunnel Improvement Project," February 16, 1995.

15 Port of San Francisco, *Port of San Francisco Waterfront Plan Phase One: Recommendations for Water-Dependent Activities (including Industry Profiles)*, August 1994.

16 Port Commission of the City and County of San Francisco, Resolution No. 95-15, adopted February 28, 1995.

17 Economic & Planning Systems, et al., *Port of San Francisco Economic and Air Quality Impact Analysis of the Tunnel Improvement Project,* prepared for the Port of San Francisco, April, 1993.

18 Vickerman Zachary Miller, Darling-Delaware Company, Inc., Proposed Cogeneration Plant at the Port of San Francisco, July 15, 1993.

19 A land transfer agreement will provide for the exchange of approximately 26 acres of Catellus property adjacent to Pier 80 (the "Western Pacific railyard" site) for approximately 14.8 acres of Port land in Mission Bay (east of and including Illinois Street, from China Basin Channel to Seventeenth Street). The land transferred to Catellus would be used to construct housing and provide open space. The Port and Catellus have entered into an Agreement to License and to Option, which calls for the license of approximately 10.8 acres of Port property primarily adjacent to the waterfront (across from Piers 48 and 50, at the mouth of China Basin Channel) to be developed by Catellus as open space (wetlands) for the City and Mission Bay. Under this Agreement, Catellus also has an option to lease the property just east of the transferred land (along Terry A. Francois Boulevard, from Mission Rock Street to Illinois/Mariposa Streets) to provide open space (the planned Mission Bay Green).

20 Department of City Planning, City and County of San Francisco, *Mission Bay Plan, Proposal for Adoption,* January 1990, as amended in September, 1991.

21 Department of City Planning, City and County of San Francisco, *Mission Bay, Final Environmental Impact Report, Volume One, Highlights & Conclusions,* certified August 23, 1990.

22 For Mission Bay Alternative A, the alternative most similar to the approved development program.

APPENDIX E: FUTURE CONTEXT AND PROJECTIONS

FUTURE CONTEXT

ONE QUANTIFIED SCENARIO

As the Waterfront Land Use Plan EIR is being prepared, the Association of Bay Area Governments' (ABAG) *Projections '94* is the most up-to-date scenario for cumulative future San Francisco and Bay Area region population and employment. *Projections '94* provides scenarios of population and employment in San Francisco and the rest of the nine-county Bay Area region from 1980 through the year 2010. For this EIR, the 1995 estimates in *Projections '94* provide the cumulative context for setting year population and employment, and the 2010 projections provide the cumulative context for future year population and employment. This section presents those estimates and projections for San Francisco and the rest of the region and describes highlights of the economic scenario they represent.[1]

As described in the EIR text (see section V.C. Housing, Population, and Employment, pp.V.C.7 - V.C.8), the future development scenario for the Waterfront Plan Project Area illustrated by the No Project Alternative is most consistent with the *Projections '94* scenario for land use change along San Francisco's waterfront.[2] For Alternatives A and B the differences in the cumulative scenario would be imarily in the geographic distribution of growth and development--where development and economic tivity in San Francisco would be located in the future--not in the total amount of growth expected. For few economic sectors, the assumptions used to define the alternatives imply a net addition to San ancisco economic activity, beyond that implicit in *Projections '94.*

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[1] ABAG published *Projections '94* in December 1993. In July 1994, ABAG produced adjusted job forecasts, in conjunction with the preparation of the census tract series for those projections. The July 1994 projections reflect changes to the 1990 estimates incorporating information from the 1990 Census "Journey to Work" file, and final revisions to 1990 estimates reflecting changes in reporting of employment to the California Employment Development Department. Other changes made during the census tract review in January - March 1994 resulted in revisions to the increment of growth by county for the 1990 - 2010 period. The adjusted July 1994 forecasts are the official ABAG projections; they are available as County totals on unpublished data sheets from ABAG. The San Francisco and regional job scenarios for 1995 and 2010 presented in the following tables use the **adjusted** projections. They are **not** the same as the numbers that appear in the *Projections '94* document. For San Francisco, the major adjustments are to the total number of jobs, not to the increment of growth. Compared to the San Francisco jobs estimate published in the *Projections '94* document, the adjusted estimates of jobs for 1995 and 2010 are lower: by about 13,000 in 1995 and by about 12,000 in 2010. In the adjusted series, the growth in total jobs for San Francisco is about 1,300 higher (just over one percent higher) than the projections published in the *Projections '94* document.

[2] It is not possible to construct a precise scenario for the Waterfront Plan Project Area from the ABAG Projections series because the census tracts that form the smallest geographic area for the *Projections '94* series are not

e analysis for this EIR did not include preparation of alternative cumulative scenarios to quantify any fferences among the alternatives in terms of either the total amount of population or job growth epected in San Francisco or the distribution of that growth within the City. The potential differences aong the alternatives are relatively small in the context of cumulative population, employment, or tvel. Furthermore, there are numerous locations in San Francisco that could substitute as development ses for Project Area locations, further diluting any rationale for preparing alternative cumulative cywide scenarios. Therefore, the differences were determined not to be material to the results of qantitative regional or local cumulative analysis such as that prepared for the transportation impact aessment. The cumulative analyses in various sections of the EIR (Housing, Population, and Eiployment; Land Use; and Transportation), as well as the Growth Inducement section, discuss these dferences qualitatively.

SN FRANCISCO CONTEXT

Husing and Population

Tle 1 shows the cumulative housing and population scenario for San Francisco from 1995 through 200. A large increase in housing units is projected; the average annual increase is 2,000 units per year. Tis high annual average net addition assumes the Mission Bay project adds substantial housing in San Fncisco during this time period and also reflects ABAG and San Francisco policy to maximize housing prduction, thereby improving prospects for labor force growth in San Francisco. From 1985 through

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coiguous with the Project Area boundaries. The census tract boundaries that span the waterfront also extend coiderably inland. Some cover large areas of the Financial District and South of Market, as well as many of the City's instrial areas from Mission Bay through most of the South Bayshore. To the north, the census tract boundaries cover thGolden Gateway, some of Jackson Square, and the mixed residential and commercial neighborhoods that form the inld parts of the northern waterfront district. Consequently, 1995 and future year estimates for these census tracts from th*Projections '94 Census Tract Series* considerably overstate the level of activity in the Waterfront Plan Project Area ale.

1994, net additions to the City's housing inventory averaged about 1,400 units per year. During this period, the annual net change fluctuated from a high of 2,345 units in 1989 to a low of 288 units in 1993.[3] While the population decline of the 1960 - 1980 period is not expected to return, population is expected to grow more slowly in San Francisco from 1995 through 2010 than it did in the preceding 15-year period. Compared to the trends of the 1980's and early 1990's, less population growth is expected to be accommodated through increases in average household size.[4] In the future, population increases in San Francisco will depend more on housing production. [5]

TABLE 1: SAN FRANCISCO HOUSING AND POPULATION : 1995, 2010 AND 1995 - 2010

	1995	2010	Change	Annual Rate
Housing Units/a/	326,000	356,000	30,000	0.59%
Households	313,500	342,300	28,800	0.59%
Household Population	746,200	801,000	54,800	0.47%
Total Population	768,300	819,000	50,700	0.43%

/a/ Housing units are calculated from household projections series assuming four percent vacancy rate pe ABAG. The State of California Department of Finance (DOF)1995 estimate of total housing units in Sa Francisco is 333,604 and the estimated vacancy rate is 6.72 percent.

SOURCE: Association of Bay Area Governments, *Projections '94* and Recht Hausrath & Associates.

Employment

Employment is expected to grow in San Francisco as the City recovers gradually from the recession of the early 1990's. According to the State of California Employment Development Department (EDD), total wage and salary employment in San Francisco peaked in 1990 at 559,000. Between 1990 and 199 (the most recent data available) , total employment declined by 37,500 jobs. Almost all sectors lost jobs. Only in the large service sector did some activities hold steady or show small increases. Accordi o EDD data, there were small amounts of employment growth in the non-profit sector (private education nd museums, social services, and membership organizations), and in personal, repair, entertainment, nd recreation services. Health services and hotels and other lodging places maintained their 1990 mployment levels throughout the recessionary period.

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[3] San Francisco Planning Department, *Housing Information Series: Changes in the Housing Inventory for 19 and 1994*, August 1995.

[4] Average household size in San Francisco increased from 2.19 persons-per-household in 1980 to 2.38 person per-household in 1995. ABAG projects that average household size in the City will level off at just under 1995 levels.

[5] ABAG acknowledges that the housing production scenario for San Francisco may be higher than what may actually be achieved: "It remains to be seen, however, if [housing] production levels will rise significantly above historic levels." (*Projections '94*, page 213.)

BAG projects that San Francisco will slowly recover the job losses of recent years and will return to a eriod of economic expansion. Table 2 shows the *Projections '94* employment scenario for San rancisco, with detail by sector. Although they are not expected to be the source of substantial nployment growth, headquarters offices and state and federal government offices will maintain a esence in San Francisco. The City will continue to be a regional center for growing business and ofessional services, the design industry, and the multi-media sector, as well as for some components of e arts and entertainment sector. A large inventory of available office space in both new and older ildings will help San Francisco compete more successfully than in the past against suburban office cations for new office activity and for expansion of existing businesses; the tight real estate market nditions that partially precipitated the move-outs of 1980s are not expected to return. The health care dustry, related services, and educational services will be a source of economic expansion and job owth in San Francisco in the future. Tourism will also continue to be an important element of the ty's economic base, but regional retail trade will become more dispersed following the pattern of sidential development and population growth in the region. San Francisco is not expected to be as ractive as other locations in the region for lower-rise, campus development attractive to bio-tech or her high-tech manufacturing and R&D activities. Continuing a long-term trend, employment in neral industry, warehousing and distribution, cargo shipping, and ship repair is expected to decline or nain at relatively low levels through the forecast period.

TABLE 2: SAN FRANCISCO JOB GROWTH BY SECTOR: 1995 - 2010

	1995		2010		1995 - 2010			Percent of Bay Area Total	
Sector	Number	Percent of Total	Number	Percent of Total	Change	Percent of Total	Annual Rate	1995	2010
Agric. & Mining	2,113	0%	2,080	0%	-33	0%	-0.10%	6%	7%
Mfg. & Wholesale	69,294	13%	68,934	11%	-360	0%	-0.03%	11%	8%
Retail Trade	75,489	14%	82,887	13%	7,398	7%	0.63%	15%	13%
Services /a/	225,304	41%	307,124	47%	81,820	79%	2.09%	21%	21%
Other/b/	180,159	33%	194,697	30%	14,538	14%	0.52%	23%	20%
TOTAL	552,359	100%	655,722	100%	103,363	100%	1.15%	18%	17%

/a/ Includes the following services: business and professional, health, personal, repair, hotels, and amusement and recreation.

/b/ Includes the following sectors: construction; transportation, communications, and utilities; finance, insurance, and real estate; and government.

SOURCE: Association of Bay Area Governments, *Projections '94. Census Tract Series*, July 1994.

REGIONAL CONTEXT

Population

Table 3 shows the 1995 - 2010 *Projections '94* population projections for the Bay Area region prepare by ABAG. Population is expected to increase by about one million, from 6.5 million people in 1995 to about 7.5 million people in 2010. Over the 15-year period, the average annual rate of increase is about one percent per year. ABAG projects that the rate of population growth will slow from that prevailing the region in the past (over 1.5 percent per year from 1980 through 1995). The trend in the redistribution of population to the more suburban parts of the region will continue. Most of the populati growth (85 percent of the total) is expected in Alameda, Contra Costa, Santa Clara, Solano, and Sonom counties. Growth in San Francisco represents five percent of regional growth; San Francisco's population growth rate is substantially slower than the rate of growth in counties where most of the region's housing will be added.

TABLE 3: SAN FRANCISCO AND BAY AREA POPULATION: 1995, 2010 AND 1995 - 2010

	1995		2010		1995 - 2010		
	Number	Percent of Total	Number	Percent of Total	Change	Percent of Total	Annual Rate
an Francisco	768,300	12%	819,000	11%	50,700	5%	0.43%
est of Region	5,736,300	88%	6,714,200	89%	977,900	95%	1.06%
OTAL	6,504,600	100%	7,533,200	100%	1,028,600	100%	0.98%

OURCE: Association of Bay Area Governments, *Projections '94.*

mployment

able 4 shows the 1995 - 2010 employment projections for the Bay Area region prepared by ABAG. otal regional employment is expected to increase from about three million jobs in 1995 to almost four illion jobs in 2010, at an annual compound growth rate of about 1.8 percent per year. In *Projections 4*, ABAG presents a somewhat faster rate of employment growth than the region experienced in the eceding 15-year period (1.2 percent per year from 1980 through 1995, inclusive of the severe recession the early 1990's). When compared to the period of moderate expansion in the 1980's, the future owth rate is somewhat slower.

ABLE 4: SAN FRANCISCO AND BAY AREA JOBS: 1995, 2010, AND 1995 - 2010

	1995		2010		1995 - 2010		
	Number	Percent of Total	Number	Percent of Total	Change	Percent of Total	Annual Rate
n Francisco	552,359	18%	655,722	17%	103,363	11%	1.15%
st of Region	2,483,585	82%	3,304,412	83%	820,827	89%	1.92%
TAL	3,035,944	100%	3,960,134	100%	924,190	100%	1.79%

URCE: Association of Bay Area Governments, *Projections '94. Census Tract Series*, July 1994.

ntinuing recent trends, the sectors expected to generate the most new jobs from 1995 through 2010 are b iness and professional services, retail trade, health services, wholesale trade, and high technology.

T decentralization of economic activity within the region also is expected to continue as the more o lying counties of Solano, Sonoma, Napa, Contra Costa and Alameda are expected to grow at the fastest rates, increasing their share of total jobs within the region. Employment growth rates are slowest in San Francisco and the South Bay: San Francisco, San Mateo, and Santa Clara are expected to have the slowest rates of growth, and their shares of total regional employment decline from 1995 to 2010. Given the size of the job base in San Francisco and Santa Clara counties, however, the absolute magnitude of the job growth in each county is large, and each still contributes a substantial share of overall regional job growth: San Francisco County accounts for 11 percent of the total and Santa Clara County for 23 percent.

COMPARISON TO OTHER CUMULATIVE FUTURE CONTEXTS

COMPONENTS OF THE CUMULATIVE FUTURE CONTEXT

Overview

The purpose of this section of the appendix is to identify and compare the projections used to define the cumulative context for land use, economic, and transportation analyses in major San Francisco environmental documents completed in 1995-6, specifically this Environmental Impact Report (EIR) or the Waterfront Land Use Plan and the joint Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Mid-Embarcadero Roadway/Terminal Separator Structure. This appendix section describes the components of the cumulative scenarios in each document and identifies the differences and similarities between them. The text and tables also compare the cumulative scenarios used in these analyses completed in 1995 to the cumulative scenario completed in 1987 for the Mission Bay EIR.

The chart below outlines the key components of the projections used in cumulative analyses in the Waterfront Plan EIR, the Mid-Embarcadero/TSS EIR/EIS, and the Mission Bay EIR. The basic requirements to complete the cumulative analyses in each environmental document are essentially the same: a **time horizon**, estimates of cumulative (citywide and regional) **population and employment** a that horizon year, and estimates of cumulative (citywide and regional) **travel** at that horizon year. Each document uses somewhat different means to define those requirements. The text following the chart describes those different components and presents the rationale for their selection.

OMPONENTS OF PROJECTIONS CONTEXT FOR CUMULATIVE ANALYSES

Document	Horizon Year	Cumulative Population and Employment	Cumulative Travel
Vaterfront lan EIR	2010	*Projections '94* (July 1994 census tract series)	MTC Regional Travel Model: *Projections '92 Recession Update*
lid- mbarcadero/ SS EIR/EIS	2015	*Projections '94* (December 1993 document) extended for San Francisco and downtown study area	MTC Regional Travel Model: *Projections '92 Recession Update* (extended for study area only)
lission Bay IR	2000	original analysis for San Francisco and *Projections '85* for rest of region	original analysis for San Francisco and MTC Regional Travel Model (*Projections '85*) for rest of region
	2020	original analysis for San Francisco and for rest of region	extrapolation of MTC Regional Travel Model based on original analysis for San Francisco and for rest of region

OURCE: Recht Hausrath & Associates.

T e Horizon

T time horizon for both *Projections '94* and *Projections '92 Recession Update* is 2010. This is the ti e horizon for the future context in the Waterfront Plan EIR. Unlike the Mid-Embarcadero R dway/TSS EIR/EIS, for which analysis state and federal agencies (Caltrans and the Federal Highway A ninistration) set the parameters, the Waterfront Plan EIR could conform to the horizon year used in th established current projections series and the existing regional travel model.

F thermore, by contrast to the Mission Bay EIR, the alternatives under consideration in the Waterfront Pl n EIR did not demand a project-specific cumulative analysis. The Mission Bay EIR evaluated al rnatives for a specific development proposal for a project area largely under the control of one pr perty owner/developer. The Waterfront Land Use Plan, proposing a range of potential opportunities ar directions for the diverse subareas of the waterfront, did not lend itself to the same kind of definition. M eover, the 15-year horizon provided by the regional projections series provided a large enough envelope for analyzing potential increases in waterfront economic activity. Development envisioned under the most ambitious Waterfront Plan EIR alternative could be accommodated within the overall scenario for San Francisco economic growth from 1995 through 2010 without assuming major distortions of the City's development pattern as reflected in the regional projections series or substantial net additional economic growth in San Francisco that might generate additional environmental impacts.

That conclusion was not the case for the Mission Bay project. To assume that the more intensive development alternatives for the Mission Bay Project Area were absorbed within the time horizon of the regional projections available at that time (i.e., by 2005) would mean that development in Mission Bay absorbed almost one-third of the total employment growth forecast for San Francisco from 1990 through 2005. That was not a reasonable assumption. Moreover, until the development agreement and specific plan for Mission Bay were adopted in 1990, intensive mixed-use development of that location was not part of the base case set of local development policy assumptions used by ABAG and the Metropolitan Transportation Commission (MTC) to allocate the regional projections for the travel model. Therefore, the time horizon for the Mission Bay EIR was pegged to an estimate of project build-out: the year 2020. The year 2000 was an interim analysis year that was within the time horizon of established San Francisc and regional projections in use at the time.

The horizon year for the Mid-Embarcadero Roadway/TSS EIR/EIS is different because of federal and state agency involvement in the environmental analysis. Those agencies require a 20-year project analysis time frame. For the downtown study area, the 2010 time horizon was extended to 2015. Estimates of population, employment and travel for the study area were prepared for 2015, extrapolating 2010 estimates considering trends in growth rates and a variety of factors influencing future growth and land use change. Outside the study area, the cumulative travel forecast used the published 2010 projections to represent the 2015 time horizon. (At the time of analysis it was already clear that *Projections '92* overstated reasonable future employment, as characterized by *Projections '94*.)

Cumulative Population and Employment

The cumulative future scenario for the land use, growth inducement, and housing, population, and employment analyses in the Waterfront Plan EIR is the most recent city and regional projections series epared by ABAG. That future context, from ABAG's *Projections '94*, is presented and described rlier in this appendix. As the most recent projections series produced by the regional planning agency the time the analyses for the Waterfront Plan EIR were conducted, *Projections '94* represented the ost current extensive analysis of regional growth prospects, historic trends, and regional and local velopment patterns.[6]

e cumulative economic and land use analyses in the Mid-Embarcadero Roadway/Terminal Separator ructure EIR/EIS are not of the same scope as those presented in the Waterfront Plan EIR or the ission Bay EIR, because the Roadway/TSS project itself would not directly cause land use change. An tensive growth inducement analysis was prepared, however.[7] The purpose of the analysis was to termine whether the sites available for development on land formerly occupied by transportation uctures would induce economic growth (i.e., employment) in downtown San Francisco beyond the el otherwise projected for the area. The growth inducement analysis reviewed San Francisco growth ential and location factors to arrive at conclusions about the growth inducement effects of the vacated es. Because the horizon year for the Mid-Embarcadero Roadway/Terminal Separator Structure studies s established as 2015, those effects were quantified for the year 2015. Using the most recent ABAG jections series, *Projections '94*, as a base, the growth inducement analysis produced estimates of San ncisco and downtown study area employment in 2015, considering patterns in San Francisco's share egional employment and trends in employment growth rates. For the study area, population estimates 2015 were also prepared, accounting for San Francisco population growth trends and reasonably seeable future residential development in the area.

Mission Bay EIR, certified in 1990, was published as a draft in 1988. The cumulative analyses were pleted in 1986 and early 1987, before the recession set in. The cumulative citywide and regional lyses in the Mission Bay EIR relied for the most part on ABAG's *Projections '85*. *Projections '87* published while the Mission Bay EIR analyses were underway, and it was reviewed as part of the kground economic research. To provide a cumulative context for build-out of the Mission Bay

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[6] During the summer of 1995, local governments reviewed preliminary projections prepared by ABAG for *ections '96*.

[7] See Mundie & Associates, *Economic and Growth Inducement Analysis: San Francisco Terminal Separator ture/Mid-Embarcadero Roadway Alternatives*, prepared for the City and County of San Francisco, January 1994

Project Area, original analysis for the Mission Bay EIR produced population and employment forecasts to 2020 for San Francisco and the other eight Bay Area counties.

Cumulative Travel

The same regional travel model, developed and maintained by MTC, is used in the Waterfront Plan EIR and the Mid-Embarcadero Roadway/TSS EIR/EIS regional transportation analyses. The MTC travel model incorporates estimates of future population and employment from ABAG's *Projections '92 Recession Update*.

In 1994 and 1995, when these transportation analyses were being prepared, the MTC regional travel model had not been updated to incorporate the *Projections '94* scenario for population and employment growth in the region through the year 2010. As described below, *Projections '94* forecasts less employment in 2010 for the region than does *Projections '92 Recession Update* and about the same lev of population. Therefore, the level of trips generated by *Projections '94* would be less than the level o trips analyzed in the current MTC travel model. Therefore, these regional travel analyses based on the earlier regional projections series are appropriately conservative, because the model analyzes a larger amount of regional travel than is expected to occur according to the more recent growth projections.

The Mission Bay EIR transportation analysis also used the MTC regional travel model. The model provided the year 2000 forecasts for travel to or from the region outside San Francisco, based on regio population and employment forecasts in ABAG's *Projections '85*. For the 2020 impact analysis, those MTC regional travel forecasts were extrapolated based on the Mission Bay EIR forecasts of regional population and employment by county in 2020. For both analysis years, cumulative travel in San Francisco, but outside the Downtown & Vicinity study area, was estimated using the MTC model as a base, with variations reflecting different forecasts of citywide population and employment developed f the Mission Bay EIR alternatives.

OMPARISON OF PROJECTIONS USED IN VARIOUS CUMULATIVE ANALYSES

opulation Projections

able 5 presents the population projections for San Francisco and the Bay Area region that are used as e cumulative future contexts in the environmental documents described above. The source of the tywide and regional population scenario in the Waterfront Plan EIR is *Projections '94*; the source of e cumulative travel scenario used in the Waterfront Plan EIR is *Projections '92 Recession Update*. The ımulative travel analysis in the Mid-Embarcadero Roadway/TSS EIR/EIS also uses *Projections '92 cession Update*. The sources for the Mission Bay EIR future scenario are *Projections '85* and original oject-specific cumulative analysis.

e main points of comparison among the forecasts are as follows:

- *Projections '94* and *Projections '92 Recession Update* reflect the results of the 1990 Census.
- The *Projections '94* 1995 population estimate for San Francisco is about 30,000 more (about four percent more) than the *Projections '92 Recession Update* estimate of 1995 San Francisco population.
- The *Projections '94* 2010 population forecast for San Francisco is also larger than the *Projections '92 Recession Update* forecast. The difference is not only the increase in the 1995 estimate of San Francisco population, but also the rate of future growth expected.
- San Francisco population is a larger share of Bay Area total population and population growth in *Projections '94*, compared to the scenario in *Projections '92 Recession Update*.
- The *Projections '94* population scenario for the region is also larger than the *Projections '92 Recession Update* scenario. For the region, however, the increase is in the 1995 estimate. For the region, the amount of growth and the growth rate from 1995 through 2010 are actually less in *Projections '94* compared to *Projections '92 Recession Update*. The difference of about 25,000 people in 2010 is small (representing less than one-half of one percent) in the context of total regional population of 7.5 million forecast for 2010.
- The Mission Bay EIR population forecast for San Francisco, based on *Projections '85* is on target with *Projections '94*. The regional population scenario is quite a bit lower, however. As indicated by the adjustments to the 1995 population estimates between *Projections '92 Recession Update* and *Projections '94*, regional population growth in the 1980's and early

TABLE 5: COMPARISON OF POPULATION PROJECTIONS

	TOTAL POPULATION						CHANGE IN TOTAL POPULATION				ANNUAL POPULATION GROWTH RATE			
Source	1980	1985	1995	2000	2010	2020	1980-1995	1985-2000	1995-2010	2000-2020	1980-1995	1985-2000	1995-2010	2000-2020
	San Francisco						San Francisco				San Francisco			
Projections '94 /a/	678,974		768,300	784,400	819,000		89,326		50,700		0.83%		0.43%	
Projections '92R /b/	678,974		737,400	766,100	778,900		58,426		41,500		0.55%		0.37%	
Mission Bay EIR /c/		741,570		785,780		830,500		44,210		44,720		0.39%		0.28%
	Bay Area Region						Bay Area Region				Bay Area Region			
Projections '94	5,179,789		6,504,600	6,875,400	7,533,200		1,324,811		1,028,600		1.53%		0.98%	
Projections '92R /b/	5,179,789		6,433,200	6,906,250	7,508,450		1,253,411		1,075,250		1.46%		1.04%	
Mission Bay EIR /c/		5,644,570		6,371,630		7,301,500		727,060		929,870		0.81%		0.68%
	San Francisco Percent of Regional Total						San Francisco Percent of Regional Change							
Projections '94	13.1%		11.8%	11.4%	10.9%		6.7%		4.9%					
Projections '92R /b/	13.1%		11.5%	11.1%	10.4%		4.7%		3.9%					
Mission Bay EIR /c/		13.1%		12.3%		11.4%		6.1%		4.8%				

/a/ *Projections '94* document published December 1993.

/b/ *Projections '92 Recession Update.*

/c/ *Projections '85* and original analysis for Mission Bay EIR.

SOURCE: Recht Hausrath & Associates.

1990's was faster than expected. The 2010 regional population forecast in *Projections '94* exceeds the 2020 regional population forecast prepared for the Mission Bay EIR that was based to a large extent on State of California Department of Finance long-term population projections (since revised to reflect 1990 Census results and other factors).

- In spite of the differences enumerated above, the successive projections describe the same pattern over time and the same relationship between San Francisco and the region. The population growth rate in both the City and the region slows over time. San Francisco population becomes a smaller share of total regional population over time; the growth rate in the City slows faster than does the growth rate in the rest of the region. That pattern is consistent with the variations in housing production capacity throughout the region.

nployment Projections

ble 6 presents the employment projections for San Francisco and the Bay Area region that are used as e cumulative future contexts in the various environmental documents. Because ABAG adjusted the *ojections '94* employment estimates and projections after publishing the original document in cember 1993, there are more differences among the sources for the employment scenarios than there e for the population scenarios. This fourth source of forecast information for future regional ployment is called *Projections '94 Census Tract Series*. Cumulative analyses in the Waterfront Plan R draw on the *Projections '94 Census Tract Series* published in July 1994 and *Projections '92 cession Update*. The Mid-Embarcadero Roadway/TSS studies relied on the *Projections '94* published December 1993 and *Projections '92 Recession Update*. The sources for the Mission Bay EIR are *ojections '85* and original project-specific cumulative analysis.

e main points of comparison among the employment forecasts are as follows:

- For the *Projections '94* census tract series published in July 1994, ABAG incorporated newly-available information from the 1990 Census "Journey to Work" file and information from the State of California Employment Development Department. The result was an adjusted employment scenario; ABAG's official estimates (the census tract series published in July 1994) are **not** the same as the employment scenario published in the *Projections '94* document (December 1993). The adjustments affect the estimates of current (1995) employment in San Francisco and the other eight counties, and the adjustments are carried through all of the forecast periods.

TABLE 6: COMPARISON OF EMPLOYMENT PROJECTIONS

	TOTAL EMPLOYMENT							CHANGE IN TOTAL EMPLOYMENT					ANNUAL EMPLOYMENT GROWTH RATE				
Source	1980	1985	1995	2000	2010	2015	2020	1980-1995	1985-2000	1995-2010	1995-2015	2000-2020	1980-1995	1985-2000	1995-2010	1995-2015	2000-2020
	San Francisco							San Francisco					San Francisco				
Projections '94 /a/	552,191		552,359	582,544	655,722			168		103,363			0.002%		1.15%		
Projections '92R /b/	552,200		571,070	615,720	683,150			18,870		112,080			0.22%		1.20%		
Mid-Embarcadero/TSS /c/	552,200		565,490	595,370	667,570	686,100		13,290		102,080	120,610		0.16%		1.11%	0.97%	
Mission Bay EIR /e/		584,900		721,590			794,800		136,690			73,210		1.41%			0.48%
	Bay Area Region							Bay Area Region					Bay Area Region				
Projections '94 /a/	2,535,629		3,035,944	3,343,978	3,960,134			500,315		924,190			1.21%		1.79%		
Projections '92R /b/	2,537,856		3,166,480	3,538,850	4,128,080			628,624		961,600			1.49%		1.78%		
Projections '94 /d/	2,537,776		3,037,950	3,358,990	3,971,380			500,174		933,430			1.21%		1.80%		
Mission Bay EIR /e/		2,790,300		3,731,490			4,194,800		941,190			463,310		1.96%			0.59%
	San Francisco Percent of Regional Total							San Francisco Percent of Regional Change									
Projections '94 /a/	21.8%		18.2%	17.4%	16.6%			0.0%		11.2%							
Projections '92R /b/	21.8%		18.0%	17.4%	16.5%			3.0%		11.7%							
Mid-Embarcadero/TSS /c,d/	21.8%		18.6%	17.7%	16.8%			2.7%		10.9%							
Mission Bay EIR /e/		21.0%		19.3%			18.9%		14.5%			15.8%					

/a/ *Projections '94 Census Tract Series*, July 1994.

/b/ *Projections '92 Recession Update.*

/c/ *Projections '94* document (December 1993) and Mundie and Associates, *Economic and Growth Inducement Analysis*, January 1994, pp. 1-11 and 1-23. Also see pp. 221 and 466 of pre-publication draft of Mid-Embarcadero/TSS EIR/EIS.

/d/ *Projections '94* document (December 1993).

/e/ *Projections '85* and original analysis for Mission Bay EIR.

SOURCE: Recht Hausrath & Associates.

- According to the *Projections '94 Census Tract Series*, the level of employment in San Francisco in 1995 is about the same as in 1980; the *Census Tract Series* starts with less employment in 1995 than do either the *Projections '94* document or *Projections '92 Recession Update.* ABAG's adjustments lowered the original *Projections '94* base year estimate of employment in San Francisco by about 13,000 jobs (just over two percent). That difference is carried through to the 2010 forecast. *Projections '94* expects employment growth in San Francisco in the future, though somewhat less employment growth and a slower rate of growth than assumed in *Projections '92 Recession Update.*

- Extending the *Projections 94* document forecast of San Francisco employment in 2010 to 2015 according to the assumptions developed for the Mid-Embarcadero Roadway/TSS growth inducement analysis results in a San Francisco employment forecast that is very close (within one percent) to the 2010 forecast in *Projections '92 Recession Update* (the basis for the MTC travel model forecast).

- By contrast, because the Waterfront Plan EIR did not involve extending the ABAG scenario beyond 2010, there is more of a difference between the San Francisco employment scenario used in the regional travel model analysis (from *Projections '92 Recession Update),* and the San Francisco employment scenario described elsewhere in the EIR (from *Projections '94 Census Tract Series*).

- For the region overall as for San Francisco, the current (1995) estimate of employment continues to be revised downward, although the difference between the projections series is relatively small. Total regional employment in the *Projections '94 Census Tract Series* is four percent less than the total in *Projections '92 Recession Update.* Across all projections completed since the recession, the amount and rate of future regional employment growth have remained about the same.

- In spite of differences in the base year employment estimates in the successive regional projections series issued since the recession, the patterns expressed in the forecasts are similar. Faster employment growth is expected in the next 15 years compared to the preceding 15 years, as both the City and the region recover from the effects of the recession. San Francisco grows at a slower rate than the rest of the region, and San Francisco's share of regional employment decreases over time.

- The Mission Bay EIR analysis was completed before the recession, when the outlook for economic growth in San Francisco and the region was considerably more bullish than it is today. For both San Francisco and the region, the Mission Bay EIR analysis shows higher growth rates in the short term (through the year 2000) and slowing growth rates over the long term. Compared to the more recent projections series, the older employment scenario is more similar to the expected population growth pattern. Although the interim year estimate of employment is quite a bit off-target, the longer-term estimate, particularly for the region, is not that far out of line with more current expectations. It is highly unlikely, however, that the 2020 employment forecast for San Francisco will be achieved within that time horizon, given the effects of the recession, the successive downward revisions in the estimates of base year employment in the City, and current expectations of growth potential.

APPENDIX F: TRANSPORTATION TECHNICAL APPENDIX

A. INTRODUCTION

This appendix contains technical and explanatory information used in the preparation of the transportation analysis for the Waterfront Land Use Plan Environmental Impact Report (EIR). The primary purpose of this appendix is to explain the assumptions and methodologies used and, where necessary, to describe aspects of the travel forecasts and other procedures used in the transportation analysis not detailed in the presentation of the setting, impacts and mitigations. Specific data developed for the technical transportation analysis are located in Background Reports of the EIR case files, available for public review at the San Francisco Planning Department, 1660 Mission Street, San Francisco, California 94103-2414.

Both regional and local transportation characteristics and analyses are presented for the Waterfront Land Use Plan EIR. The five components of the transportation analyses include vehicular traffic (including buses and delivery vehicles), transit, parking, pedestrian/bicycle activity, and goods movement. Of the five components, traffic is probably the most complex to analyze. Assumptions and descriptions of the methodologies for performing regional and local transportation analyses are presented below.

Travel demand analysis, including trip generation, trip distribution, modal assignment and network assignment, were conducted using standard land-use based methodologies. The regional model employed by the Metropolitan Transportation Commission (MTC) to project future regional travel demand and patterns is an employment-based methodology, building upon population and employment projections developed by the Association of Bay Area Governments (ABAG).

B. BASELINE ASSUMPTIONS

The Waterfront Land Use Plan EIR transportation analysis is predicated on the assumption used in this EIR for population and employment, that development occurring along the waterfront as assumed in the EIR Alternatives would generally be a part of forecast City and regional growth and would therefore not create any net new population or employment growth (or at most, minor net new growth in the case of assembly/entertainment and cargo shipping uses) in the City or the region. The implication of this assumption is that any development along the waterfront as a result of the Waterfront Land Use Plan beyond what is currently forecast by ABAG would cause another area within San Francisco, or perhaps elsewhere in the region, not to develop as fully as ABAG had projected. Thus, the Waterfront Land Use Plan would mostly result in a shift in the location of regional growth, including growth in trips. Refer to Appendix E, Future Context and Projections, for a more detailed explanation.

The No Project Alternative of the Waterfront Land Use Plan is assumed to reflect the amount of growth in the Project Area that would be expected to occur for the future 2010 cumulative context because its assumed level of Project Area development is consistent with the ABAG/MTC forecasts used for the underlying regional transportation model forecasts. Therefore, year 2010 trips generated by the Project Area in the No Project Alternative and assigned to various local streets, regional highways, and transit operators, are assumed to represent a portion of the 2010 MTC forecasts for regional travel, already accounted for in the "future setting" context. Thus, they do not constitute trip growth at the screenlines over 2010 volumes projected by MTC.

Consistent with this fundamental precept regarding implications for regional growth, the transportation analysis assumes that Alternatives A and B represent the degree of shifts in regional travel, at the specific screenlines measured. This means that the shifts in regional employment and population growth assumed in these two Alternatives translate to shifts in both location and direction of regional trips, which can be partially measured at the screenlines most pertinent to San Francisco. The analysis of the trip generation and distribution of traffic and transit demand for Alternatives A and B therefore assumes that they could potentially generate an increase in trips over those forecast by MTC for the year 2010, at the specific screenlines examined.

Other analyses in this EIR (Appendix E, Future Context and Projections) describe how Alternatives A and B do, in fact, allow that there may be potential for some new regional employment growth within the Project Area, but that the amount of this growth would be negligible in terms of its increment relative to total regional employment and population. However, there is potential that this new employment, while adding negligible numbers of new jobs, could generate disproportionately larger numbers of net new trips in the region, since the new uses which would generate this growth could be visitor-intensive (e.g. Assembly/Entertainment/Recreation land uses). Since this is net new employment growth beyond that assumed by ABAG, there is a potential for Alternatives A and B to actually generate net new 2010 trips in the region, beyond amounts estimated by MTC based on ABAG forecasts.

Changes in numbers of trips at the various screenlines measured therefore represent some combination of (1) trips generated within the Project Area that would otherwise have been generated by uses assumed to have been developed elsewhere in San Francisco (outside of the Project Area) and thus already assumed to be included in 2010 forecasts at screenlines; (2) regional trips assumed in existing 2010 forecasts to be made at other locations and/or in different directions on the regional transportation system, but which are now assumed to occur o, from and within the Project Area instead of elsewhere in the region; and (3) some possible new trip growth in the region, to the extent that the development in the Project Area would not occur elsewhere. It is impossible to determine with any degree of confidence the relative shares of total trips projected for Alternatives A or B that might represent any one, or combination, of hese examples at the various specific screenline locations on the regional facilities reported in his analysis. To be conservative for reporting and analysis purposes, however, all of the net ncreases in regional travel generated by Alternatives A and B, over that estimated to be generated by the No Project Alternative, are assumed in this analysis to be "new" and additional o volumes at the screenline locations as projected for the facilities by MTC.

t is further assumed that because of these shifts in regional travel, other transportation facilities within the City and the region could experience some reduction in travel corresponding in part to he increases shown in the analysis. This is the portion of regional changes in trip making which annot be identified and measured in the context of this EIR analysis. However, it is unknown rom what portions of the City or the region development and job growth might shift, to occur nstead within the Project Area, and thus what other regional transportation facilities and travel irections might be affected. Therefore, no compensating adjustments have been made to rojected volumes for regional transportation facilities.

Transportation System Assumptions

Existing conditions analysis was based on 1993 regional highway and local roadway geometry and circulation data. In 1993, reconstruction of the Northern Embarcadero Roadway segment had not yet begun. It was considered preferable to analyze pre-construction geometry and circulation information rather than the under-construction conditions in 1994-1995 so as to depict a normal traffic condition which can then be used to compare future forecast conditions. For the segment of the Project Area roadway network affected by construction of the Muni Metro Turnaround (MMT), counts taken prior to construction were also utilized.

The year 2010 regional transportation network assumed for this transportation analysis is based on the MTC's *Regional Transportation Plan* (RTP) and includes only those projects which are fully funded at this time. The RTP assumes no additional highway capacity to or within San Francisco beyond the 1995 highway conditions, except for replacement transportation projects resulting from the 1989 Loma Prieta earthquake and other local transportation-related planning within the City and County of San Francisco. Assumptions have been made regarding these replacement projects which reflect currently known preferences for such projects or alternatives that would maximize potential traffic carrying capacity.

The 2010 network assumed that roadway and transit improvements currently under construction, and/or roadway and transit projects which are approved and fully funded, would be operational. These roadway projects were incorporated into the transportation network that was developed for the transportation model used for local cumulative year 2010 analysis, and include:

- The Embarcadero Roadway improvements north of Broadway;
- reconstruction of King Boulevard from Third Street to new on- and off-ramps at I-280 near Fifth Street, to include two travel lanes in each direction, left turn lanes, and Muni Metro operating in the median;
- F-line construction and operation from Castro Street to Jones and Beach Streets;
- replacement of the Embarcadero Freeway and the Terminal Separator Structure with Alternative 3A from the Mid Embarcadero/TSS Study;
- construction and operation of the Muni Metro Turnaround (MMT), and construction and operation of the Muni Metro Extension (MMX) to 6th Street;
- revisions to the local roadway network in the Fisherman's Wharf area, with changes to ingress/egress to the Pier 39 garage, and to an aquarium at Pier 39 ("Underwater World");
- reconstruction of the fish processing area at Pier 45, including circulation changes; and
- seismic repair and upgrading of the Ferry Building including circulation changes.

Additionally, other transit improvements were assumed to be in place by the year 2010. Transit capital projects assumed in the analysis include:

- BART service extension to Colma, and to San Francisco International Airport along with other Peninsula stations, along with service headway reductions from the existing 3.75 minutes to between 2.25 and 2.5 minutes;

- CalTrain service extension to downtown San Francisco with some service level increases;

- additional ferry service to the East Bay, with major upgrades to the Ferry Terminal behind the Ferry Building; and

- increases to Muni Citywide capacity to serve increased cumulative demand, estimated based on the Muni 1995-2005 Short Range Transit Plan (October 1995)

C. ANALYSIS METHODOLOGY

The transportation analysis used for the Waterfront Land Use Plan is a land-use based analysis, and as such utilized standard land-use based methodologies to determine travel demand, distribution, and mode choice. These characteristics of travel vary by types of land use and thus are determined using assumptions regarding net changes in land uses, rather than in employment or population.

Trip Generation and Travel Demand

A number of sources were utilized to develop Project-related travel information. The *Guidelines for Environmental Review: Transportation Impacts (Guidelines)*, prepared by the City and County of San Francisco Planning Department, July 1991, was used as the primary source. Other major sources used were data from the *Citywide Travel Behavior Survey (CTBS)*, prepared by the San Francisco Planning Department, 1992, and the *Trip Generation Manual*, Institute of Traffic Engineers, 1991. The travel demand analysis involves development of four pieces of travel information: trip generation, trip distribution, travel mode choice, and assignment of trips to the transportation network.

- Trip generation is an estimate of the total number of person trips expected to be generated by a proposed project and is based on proposed land uses.

- Trip distribution is an estimate of the various directions of travel in which these project trips could be distributed.

- Mode choice is an allocation of total person trips made to the various choices of travel available (auto, transit, walk or "other").

- Trip assignment is the allocation of each travel mode to paths and routes available for that mode, such as a specific local street intersection, regional highway or transit operator.

rip generation, distribution to various directions of travel, mode choice and assignments were eveloped for each of the three Project Alternatives, based on their respective land use ssumptions. The sources give data regarding peaking characteristics, trip distribution and mode hoice based on weekday and weekend observations and empirical data.

Trip Generation and Linked Trips

As used in this analysis, a person trip is actually a person trip end, a single, non-stop, one-way trip from any land use to another (e.g., an employee leaving an office building and walking directly to a restaurant for lunch is one person trip end and the direct return trip is a second person trip end; if, in either direction there was an intermediate stop at another land use such as a store, then the trip between office and restaurant would represent two person trip ends).

Part of the trip generation calculations determine whether a trip is made in the "inbound" direction to the use or the "outbound" direction from the use, relative to the trip's origin or destination. Trip generation calculations determine such in and out movements by two trip purposes, work (generally journey-to-work), and non-work. Each of these purposes has different characteristics used for later calculations, such as peaking, geographic distribution and mode.

For the Waterfront Land Use Plan analysis, trip generation rates were applied to net changes in specific categories of land uses as assumed for each of the Project Alternatives. Trip generation rates from a variety of sources were used, including the *Guidelines for Environmental Review: Transportation Impacts (Guidelines)*, prepared by the City and County of San Francisco Planning Department, July 1991, the *Citywide Travel Behavior Survey (CTBS)*, prepared by a joint effort of the San Francisco Planning Department, the San Francisco Public Utilities Commission and the San Francisco County Transportation Authority, published in May 1993, and the *Trip Generation Manual*, Institute of Traffic Engineers, 1991.

Not all of the land use categories included in the Waterfront Land Use Plan have established data regarding trip generation rates. Most notably, the Plan uses a land use category of "Assembly/Entertainment/Recreation," which is inclusive of a wide variety of possible subtypes of land uses. To the extent that the various land use assumptions used for each of the Alternatives could identify specific land use subtypes in this category for which trip generation rates are published, such rates were used. Table F-1, shows how the land use categories from the Waterfront Land Use Plan were correlated to land use categories used for trip generation and other transportation demand calculations.

Trip generation rates are typically expressed in terms of the numbers of total daily trips generated, and the number of trips generated in a peak hour or period. The peak hour trip generation rates generally used in such analyses represent the number of trips a particular use would generate during the weekday P.M. peak commute hour (4:30-5:30), when the transportation system is generally at its maximum use. As such, this may be different than the peak hour of trip generation of the land use itself.

However, the Waterfront Land Use Plan analysis also analyzes local impacts for a Saturday midday condition. Therefore, assumptions were made to adjust weekday travel characteristics to Saturday conditions, most specifically peaking characteristics (percent of total daily trips made during the peak hour of the day) for work and non-work trips. The daily and peak hour trip generation rates, and the percentage split assumptions regarding work and non-work trip purposes, used for this analysis are shown in Table F-2, p. F-7. Assumptions regarding inbound-outbound direction of person trips, and regarding the adjustments to arrive at Saturday peak hour rates, are located in the Background Reports located at the San Francisco Planning Department.

TABLE F-1: LAND USE CATEGORY CORRELATION FOR TRANSPORTATION ANALYSIS

Waterfront Land Use Plan, Land Use Designation [1]	Associated Land Use Designations and Sources for Trip Generation
Residential	Residential: Appendix 1 of Guidelines [2]
Hotel	Hotel: 1992 CTBS rate [3]
Retail	Retail: 1992 CTBS rates
Assembly/Entertainment/Recreation	Cultural: 1992 CTBS rates
Wholesale Trade Promotion Center	Distribution: 1992 CTBS rates
Office/Research and Development	Office: 1992 CTBS rates [4]
Warehouse/Light Industrial	Manufacturing/Distribution: 1992 CTBS rates
Cargo Shipping	Waterport/Marine Terminal: ITE rate [5]
Fishing Industry	Fish center: previous study [6]
Recreational Boating and Water Uses	Recreational marina: ITE
a) Ferry and Water Taxis b) Excursion Boats	a) not included due to use not being a traffic generator b) included in assembly/entertainment/recreation
Cruise Ships	(not included due to the infrequent activity)
Maritime Support	Office: 1992 CTBS data (including weekends)
Historic Ships	Open Space: ITE
Transportation Facilities	(not included due to use not being a traffic generator)
Community Facilities	Cultural: 1992 CTBS data
Open Space	Open Space: ITE
Public Access	Open Space: ITE
Temporary and Ceremonial Berthing	Open Space: ITE

[1] Waterfront land use list as provided to the San Francisco Planning Department.

[2] San Francisco Planning Department, *Guidelines for Environmental Review: Transportation Impacts*, July 1991.

[3] San Francisco Planning Department, extracted from data collected for the Citywide Travel Behavior Survey, conducted in 1992.

[4] It was generally assumed that no travel is generated on weekends for office uses.

[5] Institute of Transportation Engineers, *Trip Generation 5th Edition*, 1991.

[6] DKS Associates, *Port of San Francisco Fisherman's Wharf Seafood Center Traffic and Transportation Study*, 1989.

Table F-2

SAN FRANCISCO WATERFRONT EIR TRIP GENERATION RATES

Land Use (1)	Unit	Daily Trip Rate	Weekday PM Peak Hour Trip Rate	Weekend Noon Peak Hr. Trip Rate	Work/Non-Work Split (2) 24 Hour	PM Peak Hour
Non-Water Dependent Uses					.	
1a. Residential: 2+ Bedroom Multi-Unit	Dwelling Units	10.00	1.73	1.73	33% / 67%	50% / 50%
1b. Residential: 1 Bedroom / Studio	Dwelling Units	7.50	1.31	1.31	33% / 67%	50% / 50%
2a. Hotel (SD 1)	Rooms	6.92	0.60	0.57	10% / 90%	45% / 55%
2b. Hotel (SD 2,3,4)	Rooms	8.25	0.72	0.68	10% / 90%	45% / 55%
3a. Local Retail: General Convenience under 50,000 sq ft. (SD 1)	1000 ft. GSF	466.00	42.87	46.13	8% / 92%	8% / 92%
3b. Local Retail: General Convenience under 50,000 sq ft. (SD 2,3,4)	1000 ft. GSF	248.00	22.82	24.55	8% / 92%	8% / 92%
3c. Regional Retail: Large Retail over 50,000 sq. ft. (SD 1)	1000 ft. GSF	95.00	8.74	9.41	8% / 92% (4)	8% / 92%
3d. Regional Retail: Large Retail over 50,000 sq. ft. (SD 2,3,4)	1000 ft. GSF	168.00	15.46	16.63	8% / 92% (4)	8% / 92%
3e. Specialty Retail (SD 1)	1000 ft. GSF	95.00	8.74	9.41	8% / 92% (4)	8% / 92%
3f. Specialty Retail (SD 2,3,4)	1000 ft. GSF	168.00	15.46	16.63	8% / 92% (4)	8% / 92
4a. Cultural (SD 1)	1000 ft. GSF	304.00	29.00	41.47 (7)	8% / 92% (4)	8% / 92
4b. Cultural (SD 2,3,4)	1000 ft. GSF	259.00	24.00	34.32 (7)	8% / 92% (4)	8% / 92
5. Athletic Club	1000 ft. GSF	57.00	4.50	6.44 (7)	8% / 92% (4)	8% / 92
6. Wholesale Trade / Promotion Center	1000 ft. GSF	10.20 (14)	0.30 (14)	0.43 (7)	8% / 92% (6)	33% / 67
7a. Office Under 100,000 GSF	1000 ft. GSF	19.60	2.61	0.00 (5)	36% / 64%	83% / 17
7b. Office 100,001-200,000 GSF	1000 ft. GSF	14.90	1.98	0.00 (5)	36% / 64%	83% / 17
7c. Office 200,000+ GSF	1000 ft. GSF	11.10	1.48	0.00 (5)	36% / 64%	83% / 17
7d. Governmental Office	1000 ft. GSF	71.00	9.44	0.00 (5)	20% / 80%	83% / 17
8. Warehouse / Light Industrial	1000 ft. GSF	10.20 (14)	0.30 (14)	0.30 (14)	14% / 86% (8)	75% / 25
9. General Industry	1000 ft. GSF	7.90 (10)	1.00 (10)	1.00 (10)	40% / 60% (10)	67% / 33
Water Dependent Uses						
10. Cargo Shipping (Container)	Acres	11.93 (3)	1.19 (15)	1.19 (3)		
Converted to Person Trips	Acres	13.72 (9)	1.37 (9)	1.37 (9)	14% / 86% (8)	75% / 25
11. Ship Repair	1000 ft. GSF	7.90 (10)	1.00 (10)	1.00 (10)	40% / 60% (10)	67% / 33
12. Fishing Industry	1000 ft. GSF	13.30 (13)	0.67 (13)	0.67 (13)		
Converted to Person Trips	1000 ft. GSF	15.30 (9)	0.77 (9)	0.77 (9)	14% / 86% (8)	75% / 25
13. Ocean and Bay Center	1000 ft. GSF	8.50 (13)	0.85 (13)	0.85 (13)		
Converted to Person Trips	1000 ft. GSF	9.77 (9)	0.98 (9)	0.98 (9)	8% / 92% (6)	33% / 67
14. Fisheries/Conference Center	1000 ft. GSF	28.50 (13)	6.56 (13)	6.56 (13)		
Converted to Person Trips	1000 ft. GSF	32.78 (9)	7.54 (9)	7.54 (9)	8% / 92% (6)	33% / 67
15. Seafood Test Kitchen/Offices	1000 ft. GSF	10.80 (13)	1.19 (13)	1.19 (13)		
Converted to Person Trips	1000 ft. GSF	12.42 (9)	1.37 (9)	1.37 (9)	8% / 92% (6)	33% / 67
16. Recreational Boating	Acres	20.93 (3)	0.19 (15)	0.27 (3)		
Converted to Person Trips	Acres	34.12 (11)	0.31 (11)	0.44 (11)	8% / 92% (4)	8% / 92
17. Maritime Support - Distribution	1000 ft. GSF	10.20 (14)	0.30 (14)	0.30 (14)	14% / 86% (8)	75% / 25
TOTALS						

NOTES:

All Data is from the Technical Appendices to the Guidelines for Environmental Review: Transportation Impacts, Dated July, 1991, or extracted from the 1992 CTBS data, unless otherwise specified.

The person trip numbers are raw. No reductions or adjustments for linked, internal, or pass-by trips or for mode split are includ

(1) SD = Superdistrict

(2) Work/Non-Work splits for Non C-3 Districts from the Technical Appendices to the Guidelines were used.

(3) Trip rates are taken from the 1991 ITE Trip Generation Manual and are in vehicle trips.

(4) Convenience Retail work/non-work trip split for non C-3 districts was used.

(6) Sales/Showroom work/non-work splits for non C-3 districts were used.

(7) Saturday rate is 1.43 times the weekday PM peak hour rate for all A/E/R uses (per Underwater World constrained trip analysis

(8) Distribution work/non-work split was used.

(9) Vehicle trips have been converted to person trips using a vehicle occupancy rate of 1.15 for Industrial Plants from the San Diego Traffic Generators Report, San Diego Association of Governments, January 1990.

(10) Manufacturing trip rates extracted from the 1992 CTBS data and manufacturing work/non-work splits were used.

(11) Vehicle trips have been converted to person trips using a vehicle occupancy rate for a community park of 1.63 from Caltrans' 12th Progress Report on Trip Ends Generation Research Counts.

(13) Trip rate taken from the Port of San Francisco Fisherman's Wharf Seafood Center Traffic and Transportation Study, DKS Associates, 1989.

(14) Distribution trip rates extracted from the 1992 CTBS data were used.

(15) PM peak hour assumed to be 10 percent of daily trip rate.

Standard trip generation rates are based on isolated land use situations, and reflect an estimate of the absolute total number of trips entering and leaving a given use, without respect to the synergistic relationships to other uses in the area and the implications for trip linkages among these uses. It would not be reasonable, in the context of a program level analysis such as that for the Waterfront Land Use Plan, to assume that 100 percent of all trips resulting from application of the trip generation rates to each and every land use would be new trips made into and out of the Project Area. Some adjustments were therefore needed to the total number of person trips, to reflect an estimation of "new" trips to the Project Area generated by development resulting from the Waterfront Land Use Plan, versus trips made to establishments developed as a result of the Plan by persons who would already be in the Project Area because they have origins or destinations at existing uses.

In addition, some new visitors to the area could have multiple destinations (e.g., an initial destination to a entertainment facility with a secondary trip to an associated retail complex, and possibly to a restaurant within the same area). As noted above, the entrances and exits to each of these establishments are included as a component of the total trip generation rate that is applied to each land use individually. These trips made by persons already in the area are referred to as "linked" or shared trips. In the context of a program level analysis, there would be substantial double counting (or possibly multiple counting) of linked trips, without some adjustment.

Adjustments to account for trip linkages are typically made to only one land use type, so that there is not an overcompensation. For the Waterfront Land Use Plan analysis, factors were applied to the total number of trips generated for the cultural land uses (a portion of Assembly/ Entertainment/Recreation uses) to reduce total trips and, thereby, reflect only "new" trips to the Project Area. The following factors were applied to the person trips calculated for cultural uses: 0.31 for the Fisherman's Wharf subarea, 0.82 for the Northeast Waterfront subarea, and 0.96 for he South Beach/China Basin subarea. The adjusted "new" persons trips for each Alternative for he cultural uses reflect the incidence of link trips and trips internal to the Project Area.

Cultural trip generation factors from CTBS were used to develop trip data for appropriate uses in the Assembly/Entertainment/Recreation land use category. The 0.31 factor applied to the Fisherman's Wharf subarea was based on information from the Underwater World Aquarium Traffic and Transportation Study report (DKS Associates, July 1989), and reflects the same actor used for that project's analysis to determine the percentage of total patrons to the Aquarium that would be new to the Fisherman's Wharf area (visiting the area primarily due to his new attraction). The 0.82 factor applied to the Northeast Waterfront subarea was based on he 18 percent internal trip distribution for cultural land uses in Superdistrict 1 (Northeast San Francisco), from the 1992 CTBS study. The 0.96 factor applied to the South Beach/China Basin ubarea was, similarly, based on the 4% CTBS internal trip distribution rate for cultural uses in uperdistrict 3 (Southeast San Francisco).

Trip Distribution

rip distribution information from both the *Guidelines for Environmental review: ransportation Impacts*, and the May 1993 *CTBS* were used. The *CTBS* data includes a finer reakdown of trip distribution by use, location of use, and type (work versus non-work) than the *uidelines*, and thus was used for many land uses. Where applicable, trip distribution data by ocation of use was applied, such that uses located in Superdistrict 1 (the San Francisco ortheast quadrant encompassing the Fisherman's Wharf, Northeast Waterfront and Ferry

Building subareas of the Project Area) were assumed to have different trip distribution characteristics than those located in Superdistrict 3 (the Southeast quadrant of the City, encompassing the South Beach/China Basin and Southern Waterfront subareas).

Trip distribution calculations assign person trip ends to directions of travel according to origin/destination "corridors." These are the four quadrants of San Francisco which roughly correspond to MTC Superdistricts (Northeast, Northwest, Southeast and Southwest); the East Bay; the North Bay; and the South Bay. Additionally, trips are assigned to an "internal" origin/destination. For the Waterfront Land Use Plan analysis, such internal trips were assumed to be made to and from other points within each of the individual Project Area subareas in which the trips are generated. As such, these internal trips largely represent the linked trips described in the discussion above. Information regarding the specific data used is located in the Background Reports located the EIR case file 94.155E, at the San Francisco Planning Department.

Modal Assignment

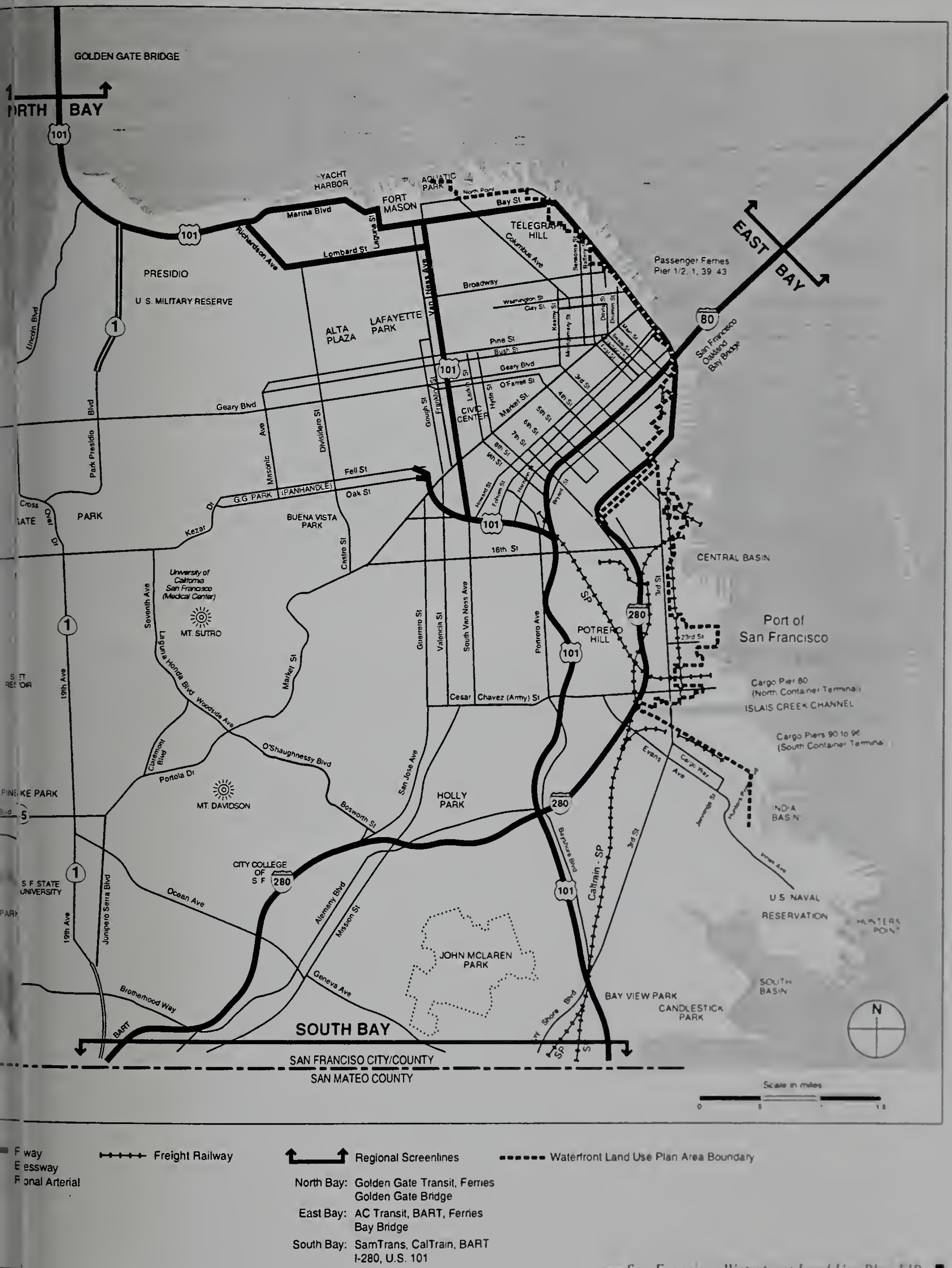
Mode split information from both the *Guidelines for Environmental Review: Transportation Impacts*, and the May 1993 *CTBS* were used. No assumptions were made regarding potential modal shifts that might occur between the base year (1993) and the planning horizon year (2010) because there was no basis on which to make any such assumptions. Modal split information from these sources indicates that, for many land uses, and particularly for uses located in and around the downtown, there is a substantial pedestrian modal share. This assignment to the pedestrian mode largely represents the internal, linked trips described in the discussions above. Information regarding data used is available in the Background Reports located at the San Francisco Planning Department.

Traffic Analysis

Regional Transportation

The regional analysis focuses on the external trips generated by the three Alternatives, i.e., the trips with either an origin or destination outside the San Francisco city limits. The regional traffic analysis consists of determining the amount of external trips generated by the three Alternatives for the WLUP during the P.M. peak hour at key locations referred to as regional screenlines. Regional screenlines are hypothetical delineations that could be crossed by travelers between the City and the rest of the region. There are three screenlines and four roadways associated with travel to and from the Project Area. As shown in Figure F-1, p. F-10, these screenline locations include the East Bay screenline delineated by the Bay Bridge, the North Bay screenline measured at the Golden Gate Bridge, and the South Bay screenline depicted at both U.S. Highway 101 (U.S. 101) and Interstate Highway 280 (I-280) at the San Francisco/San Mateo Counties border.

Existing traffic volumes for the Bay Bridge, U.S. 101, and I-280 screenline locations were derived from data in *The Transportation Technical Report for the Alternatives to Replacement of the Mid-Embarcadero Freeway and Terminal Separator Structure (Mid Embarcadero/TSS)*, dated May 15, 1995 as revised. Data for existing conditions on the Golden Gate Bridge were obtained from the *San Francisco Bay Area State Highway System 1992/93 Observed Traffic Counts*, Metropolitan Transportation Commission, January 1995.



E. D t 1994 Regional Transportation Plan.
N C Graphics, 6/13/94, and San Francisco
P ning Department

San Francisco Waterfront Land Use Plan EIR ■

Figure F-1

Regional Screenlines

The base data for the regional travel impact analysis was derived from MTC's regional transportation modeling and analysis, and the *Technical Report for Mid Embarcadero/TSS*. The travel forecasts were developed using population and employment estimates from ABAG's "Projections '92 (Revised)." Refer to Appendix E, Future Context and Projections, for further explanation of the data bases used for 2010 conditions. The WLUP horizon year is 2010, while the *Mid-Embarcadero/TSS* horizon year is 2015. Therefore, the 2010 forecasts for the Bay Bridge, U.S. 101 and I-280 screenlines were interpolated between existing volumes and the 2015 forecasts developed for the *Mid-Embarcadero/TSS* project.

For the North Bay screenline at the Golden Gate Bridge, no similar forecast data were available. Historical data show that traffic on the Golden Gate Bridge reached a peak in the late 1980's, and has experienced some decline with a "flattening out" in recent years. Economic analyses indicate that this pattern is consistent with employment and residence distribution trends, with the percentage of San Francisco employees who reside in Marin and Sonoma Counties declining. As employment increases in these two North Bay counties, residents tend to be employed there in higher percentages than in years past, with commuting to San Francisco, as a percentage, declining or remaining flat. Potential for vehicular trip growth in the Golden Gate corridor is mostly related to interregional travel (e.g. between the North Bay, South Bay, or East Bay). The data derived from the Mid-Embarcadero/TSS study indicates that traffic in both directions on U.S. 101 and I-280 is projected to increase by only 3% between 1993 and 2010. Therefore, this same growth rate for the planning period is assumed to be appropriate for the Golden Gate Bridge traffic as well.

It is assumed that, at the macro-level, the MTC model 2010 forecasts are accurate for the cumulative traffic conditions for the No Project Alternative including those at the four regional screenline locations. The No Project Alternative is consistent with ABAG projections which underlie the MTC travel model forecasts (as discussed above under "Baseline Assumptions"). The incremental project traffic generated by Alternatives A and B at the screenline locations is added to the cumulative 2010 (No Project Alternative) traffic at the screenline locations to estimate the increase in traffic at these screenlines resulting from traffic generated by Alternatives A and B.

The indicator used in this analysis of regional traffic performance is the volume-to-capacity (v/c) ratio. Volume and capacity are parameters most often used by traffic engineers to describe operational characteristics of a facility. This ratio indicates how much of the capacity of the freeway is being used by the traffic volume. Values approaching 1.0 indicate near saturation conditions (the roadway volume is nearly equal to its theoretical capacity and is therefore nearly 100% "full"), while a value in the mid-range, i.e., 0.5, indicates that traffic volumes are only 50% of the segment's total theoretical capacity, with the other 50% (the reserve capacity) being available for additional traffic growth. A v/c ratio greater than 1.0 results when demand exceeds the capacity of a facility to fully accommodate it, indicating that there would be substantial back-ups at entrance points to the system (freeway ramps). These v/c ratios are, therefore, relative measures of the degree of congestion on a facility, at a specific point on that facility, and to the extent values approach or exceed capacity, relative measures of the degree of back-up at entrance ramps. It should be noted that capacity numbers used for a facility are theoretical. The actual capacity can be affected by such considerations as speed, lane widths, number of interchanges or weaves or other conflicts, mix of traffic, and the like. While some adjustment to "textbook" capacity numbers have been made for this analysis to reflect conditions of the specific highway locations measured, at these Bay Area regional screenlines a v/c ratio in the range of 0.92 to 0.95

would be considered approaching maximum saturation, in the context of averaged volumes. For this analysis, a value exceeding 0.95 would indicate that the facility, at the point measured, is functioning at its maximum practical capacity.

Lane capacities used to determine the theoretical hourly capacity for the four roadways at the regional screenlines (Table F-3) are based on the Transportation Research Board's *Highway Capacity Manual*, 1985 as revised. The characteristics of freeway operating conditions depend on a wide range of factors which also affect actual capacity. However, at a given point on a freeway (and in the case of the WLUP EIR, at the regional screenlines), volume and maximum capacity under ideal conditions have been calculated to help explain and understand how full the freeway would be and whether or not the freeway is capable of handling additional traffic. For the Bay Bridge, U.S. 101 and I-280 screenlines, the per lane capacity used for calculating total capacity is 2,300 vehicles per hour. This maximum theoretical per lane capacity was used since the Bay Bridge has 12-foot wide lanes, a limited number of ramps, and five lanes of separated traffic in each direction. A 1,900 vehicle per lane capacity was used to determine the theoretical capacity of the Golden Gate Bridge. This lower per lane capacity was used because the Golden Gate Bridge traffic lanes are ten feet wide (narrow by freeway standards), the traffic lane directions are separated only by moveable traffic cones, and there is the presence of sightseeing vehicles including tour buses which tend to slow traffic. Actual capacities vary depending on many factors including road and weather conditions, driving characteristics, and travel speeds.

Local Traffic Analysis

Local transportation analysis for the Project Area goes beyond the standard employment-based egional model. The Transportation Research Board (TRB), a division of the National Science Foundation, has developed standardized methods for use in evaluating traffic flow on roadways nd streets. Different methodologies are available for analyzing freeways, freeway ramps, urban ighways, rural highways, unsignalized and traffic signal-controlled intersections, and transit. The methodology used for the Waterfront Land Use Plan intersection analysis employed the Transportation Research Board Highway Capacity Manual (HCM), Special Report 209, 1985, Operations Level Methodology" for signalized intersections. The HCM methodology etermines the critical movement at an intersection and compares the traffic volumes to the heoretical capacity of the respective movement.

ABLE F-3: REGIONAL HIGHWAY CAPACITIES

Freeway	Lane Capacity	No. of Lanes (weekday P.M. peak hour)	Freeway Capacity
Golden Gate Bridge			
Northbound	1,900/hour	4	7,600/hour
Southbound	1,900/hour	2	3,800/hour
Bay Bridge both directions)	2,300	5	11,500
U.S. 101 both directions)	2,300	4	9,200
-280 both directions)	2,300	4	9,200

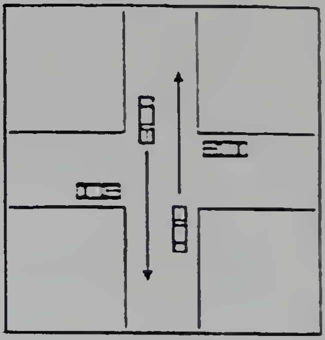
Several factors are taken into consideration in determining the levels of service for signalized intersections. The input data needed for the operational analysis are in three main categories - geometric conditions, traffic conditions, and signalization conditions. All conditions are given for the existing setting and the future year 2010 situation. Geometric conditions and signalization data were obtained from the Mid-Embarcadero/TSS analysis and Department of Parking and Traffic data for existing and future situations, while the traffic condition characteristics were obtained by field observation and by conducting manual traffic counts. Geometric conditions are presented in diagram form and include type of grades on the approaches, number and width of lanes, and parking conditions. Left- and right-turn lanes are also identified. Traffic conditions must be specified for each movement on each approach. Vehicle type distribution (heavy vehicles and buses which stop at the intersection) and pedestrian flows are also needed. A critical traffic condition characteristic is the designation of arrival type. This characterization describes at which time during the signal cycle groups of vehicles arrive at the intersection. Traffic condition data used as input for modeling intersection level of service also includes the activity in the parking lane, measured by the number of parking maneuvers per hour within 250 feet of the intersection. The final category of input data required is traffic signalization data. This information includes the phasing plan, cycle length, green times, and change intervals (actuated or pretimed, pedestrian push button or minimum pedestrian green). The detailed level of service calculation sheets developed for each study intersection for the existing conditions, the No Project Alternative, Alternative A, and Alternative B specify the geometric, traffic, and signalization conditions applied in this analysis. These calculation sheets are located in the EIR files at the San Francisco Planning Department.

The HCM methodology also contains procedures for the capacity analysis of unsignalized intersections. These procedures provide a comparative measure of delay at two-way STOP and YIELD-controlled intersections for those movements which must yield to conflicting movements at the intersection. Through vehicles on the major street are not required to yield to other movements at T- and two-way controlled intersections (known as minor intersections). The general indicator of intersection delay is determined by calculating the one-hour capacity for each key movement, based on conflicting traffic volumes, and then comparing the number of vehicles making that maneuver to the calculated capacity. The unused or "reserve" capacity for that movement is then used to identify a level-of-service for that movement. Unlike signalized analysis, an overall intersection level-of-service is not calculated, but rather a level-of-service is calculated for each lane group.

The HCM methodology defines level of service (LOS) in terms of delay. Delay is the average amount of time a vehicle must wait at an intersection before being able to pass through the intersection. For signalized intersections, the relationship between LOS and delay is based on the average stopped delay per vehicle for a fifteen-minute period. The LOS is related to the delay by using a scale with a range of LOS A (very low delay) to LOS F (forced flow conditions). Complete LOS criteria for signalized intersections is illustrated in Figure F-2. The level of service criteria for unsignalized intersections is depicted in Table F-4, p. F-15.

Level of service is measured for the intersection approaches, not for the intersection as a whole. Basically, there are two types of approaches for yield or stop-sign controlled intersections - minor and major approaches. The major approach is the main roadway which normally has no traffic control (no stop or yield); while a minor approach is secondary (minor) to the intersection and has a stop or yield sign. Generally speaking, the HCM methodology assumes that major

ThOPERATIONS LEVEL METHODOLOGY, which is described in the Trsportation Research Board's Highway Capacity Manual, defines Level of Service (LG) for signalized intersections in terms of delay. Technically, delay is the amount of ne an average vehicle must wait at an intersection before being able to pass hrigh the intersection. For signalized intersections, the relationship between LOS andelay is based on the average stopped delay per vehicle for a fifteen minute ce d.


LOS 'A'

LEEL OF SERVICE 'A' - Delay 0.0 to 5.0 seconds

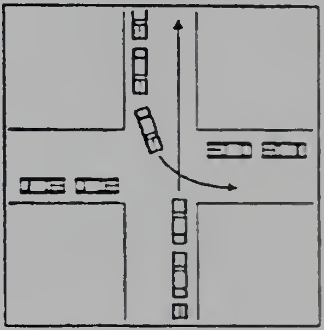
De ribes operations with very low delay, i.e., less than 5 seconds per vehicle. This occ's when signal progression is extremely favorable. Most vehicles arrive during he reen phase and are not required to stop at all.

Coesponding V/C ratios usually range from 0.00 to 0.60.

LEEL OF SERVICE 'B' - Delay 5.1 to 15.0 seconds

Cesribes operations with delay in the range of 5 to 15 seconds per vehicle generally cha cterized by good signal progression and/or short cycle lengths. More vehicles are quired to stop than for LOS 'A' causing higher levels of average delay.

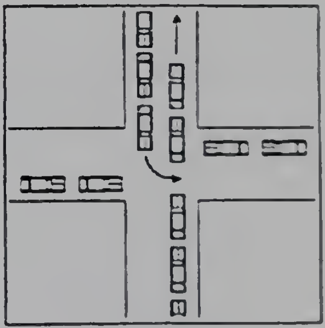
Cosponding V/C ratios usually range from 0.61 to 0.70.


LOS 'C'

LE L OF SERVICE 'C' - Delay 15.1 to 25.0 seconds

Des ibes operations with delay in the range of 15 to 25 seconds per vehicle. Occsionally, vehicles may be required to wait more than one red signal phase. The nuner of vehicles stopping at this level is significant although many still pass through the ersection without stopping.

Corsponding V/C ratios usually range from 0.71 to 0.80.


LOS 'D'

LE L OF SERVICE 'D' - Delay 25.1 to 40.0 seconds

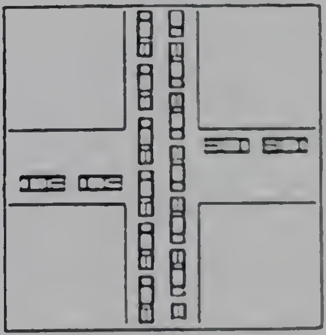
Desibes operations with delay in the range of 25 of 40 seconds per vehicle. At LOS D, e influence of congestion becomes more noticeable. Many vehicles stop, and the oportion of vehicles not stopping declines. The number of vehicles failing to clea he signal during the first green phase is noticeable.

Cor sponding V/C ratios usually range from 0.81 to 0.90.

LEVL OF SERVICE 'E' - Delay 40.1 to 60.0 seconds

Des bes operations with delay in the range of 40 to 60 seconds per vehicle. These h gh elay values generally indicate poor signal progression, long cycle lengths and h gh /C ratios. Vehicles frequently fail to clear the intersection during the first green pas

Corsponding V/C ratios usually range from 0.91 to 1.00.


LOS 'F'

LEV OF SERVICE 'F' - Delay 60.1 seconds plus

Des es operations with delay in excess of 60 seconds per vehicle. This condition ofte ccurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the irsection.

Corr ponding V/C ratios of over 1.00 are usually associated.

RCE: nsportation Research Board. "Operations Level thodology-Signalized Intersections". *Highway Capacity Manual*, ecial Report 209. 1985.

Figure F-2
Level of Service Criteria
for Signalized Intersections

TABLE F-4: LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Reserve Capacity (PCPH)/a/	Level of Service	Expected Delay to Minor Street Traffic
≥ 400	A	Little or no delay
300-399	B	Short traffic delays
200-299	C	Average traffic delays
100-199	D	Long traffic delays
0-99	E	Very long traffic delays
/b/	F	/b/

/a/ Passenger cars per hour.

/b/ When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement to the intersection.

SOURCE: Transportation Research Board, "Operations Level Methodology," Highway Capacity Manual, Table 10-3, Special Report 209, 1985.

street traffic is not affected by traffic occurring on the minor street while minor street movements must either stop or yield, and therefore, are affected by the movements on the major street. Therefore, for the purposes of the WLUP EIR traffic analysis, the level of service at these intersections is only analyzed for the minor streets. The one- and two-way stop controlled intersections analyzed for the WLUP EIR under the existing conditions include The Embarcadero (the major approach) at the minor approaches of Beach, Battery/Lombard, Bryant and Brannan Streets; and Third and Fourth Streets (the major approaches) at King Street, the minor approach. The implications are that traffic along The Embarcadero, Third and Fourth Streets is not impeded by cross traffic; however, the minor street traffic must wait for an available gap to enter the major roadway. The assumptions made for the year 2010 analysis are that The Embarcadero intersections with Beach, North Point, Bryant, and Brannan Streets would be signalized. It is assumed that King Street at the intersections of Third and Fourth Streets also would be signalized.

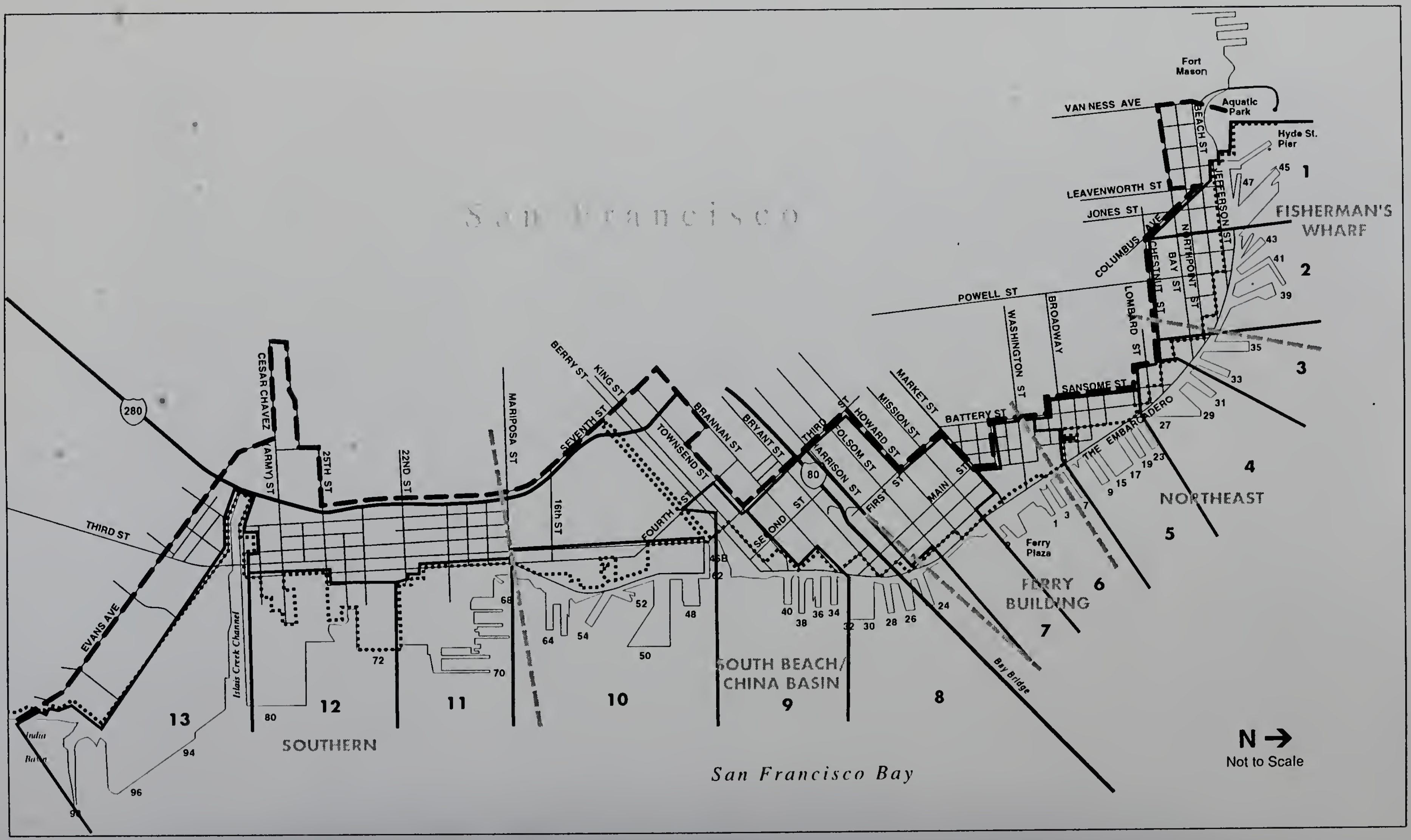
Levels of service for four-way, and all-way stop intersections are more complex to calculate. The WLUP EIR analyzed two such intersections under existing conditions - Jefferson/Jones Streets, a T-intersection, and North Point/Powell Streets, a four-way stop intersection. For the year 2010, the T-intersection of Jefferson and Jones Streets is assumed to be signalized, while the four-way stop at North Point and Powell Streets remains as a four-way stop.

The local traffic analysis employed the use of the TRAFFIX modeling software. TRAFFIX is a peak period intersection-based model designed to analyze traffic impacts at intersections within a given network (area). The base volume data in the TRAFFIX model is from actual count data; therefore, the baseline model correctly replicates current traffic conditions at analyzed intersections within the network. Instead of using employment and population as a basis for traffic projections (as is the case for the regional model analysis), the local TRAFFIX model develops traffic projections based on land uses.

As shown on Figure F-3, the TRAFFIX model developed for the Waterfront Land Use Plan EIR contains thirteen Project Area trip generation zones. The thirteen trip generation zones fall within the five Waterfront Land Use Plan subareas defined by the Port, and roughly correspond to several of MTC's waterfront traffic analysis zones. Boundaries for the thirteen zones were defined based on an assumed land use relationship between pier and seawall lot groupings. Using TRAFFIX, a network was prepared that encompasses the Project Area and contains 24 intersections for the weekday P.M. peak hour conditions and 15 intersections for the weekend midday peak hour conditions, as listed in Table F-5, p. F-18, and depicted on Figure F-4, p. F-19. The intersections were chosen on the basis that they represent potential capacity constraints within the local area, and they are representative of other intersections in the immediate vicinity. Based upon previous studies and understanding of how the local intersections operate, weekend intersection analyses were not necessary for all 24 intersections.

The existing (baseline) traffic conditions were developed using actual traffic counts. The existing conditions represent traffic operations as they existed prior to the beginning of construction activities associated with the Embarcadero roadway and Muni improvement projects. Pre-construction activities better represent existing, normal traffic operations than construction conditions which have required substantial alterations to circulation patterns and traffic volumes. In addition, multiple phases of construction in 1994 and 1995 created continually changing traffic conditions, making it impossible to characterize a single roadway condition against which project impacts could be analyzed. In order to develop a setting reflecting existing conditions, traffic counts were obtained from previous studies prepared prior to the construction along The Embarcadero using 1993 as the baseline year. Other counts at intersections not affected by the construction and which had not been counted recently were collected in September and October 1994.

Local cumulative conditions for the year 2010 were based upon the data presented in the Transportation Technical Report for *Mid-Embarcadero/TSS*. Adjustments to the traffic forecasts from the *Mid-Embarcadero/TSS* were made due to the difference in horizon years - the Waterfront Land Use Plan EIR horizon year is 2010, and the *Mid Embarcadero/TSS* horizon year is 2015. To obtain 2010 traffic forecasts during the weekday P.M. peak hour, traffic volumes were interpolated from the 2015 forecasts developed for the *Mid Embarcadero/TSS* at nine intersections common to both studies: The Embarcadero at Sansome, Battery, Broadway, Washington, Mission, Folsom, Harrison, Bryant, and Brannan Streets. Interpolation was accomplished by comparing the 2015 forecasts from the *Mid Embarcadero/TSS* to existing counts, and calculating an annualized growth rate by direction of approach to the intersection (see Table F-6, p. F-20). In this way, an average growth factor for each direction of travel was determined. The annualized growth rate was adjusted somewhat to reflect knowledge regarding



- ········ Waterfront Land Use Plan Area Boundary (Plan Area boundary and subarea boundaries are approximate.)
- ▬ ▬ ▬ Subarea Boundary
- ▬ ▬ Transportation Study Area Boundary
- 1 Traffix Zones

NOTE: The Port also owns property south of India Basin, shown on the subarea map of the Southern Waterfront (Figure 6b).

SOURCE: San Francisco Planning Department, December 1994

Figure F-3

Transportation Study Area with Traffix Zones

Table F-5
TRAFFIC ANALYSIS STUDY INTERSECTIONS

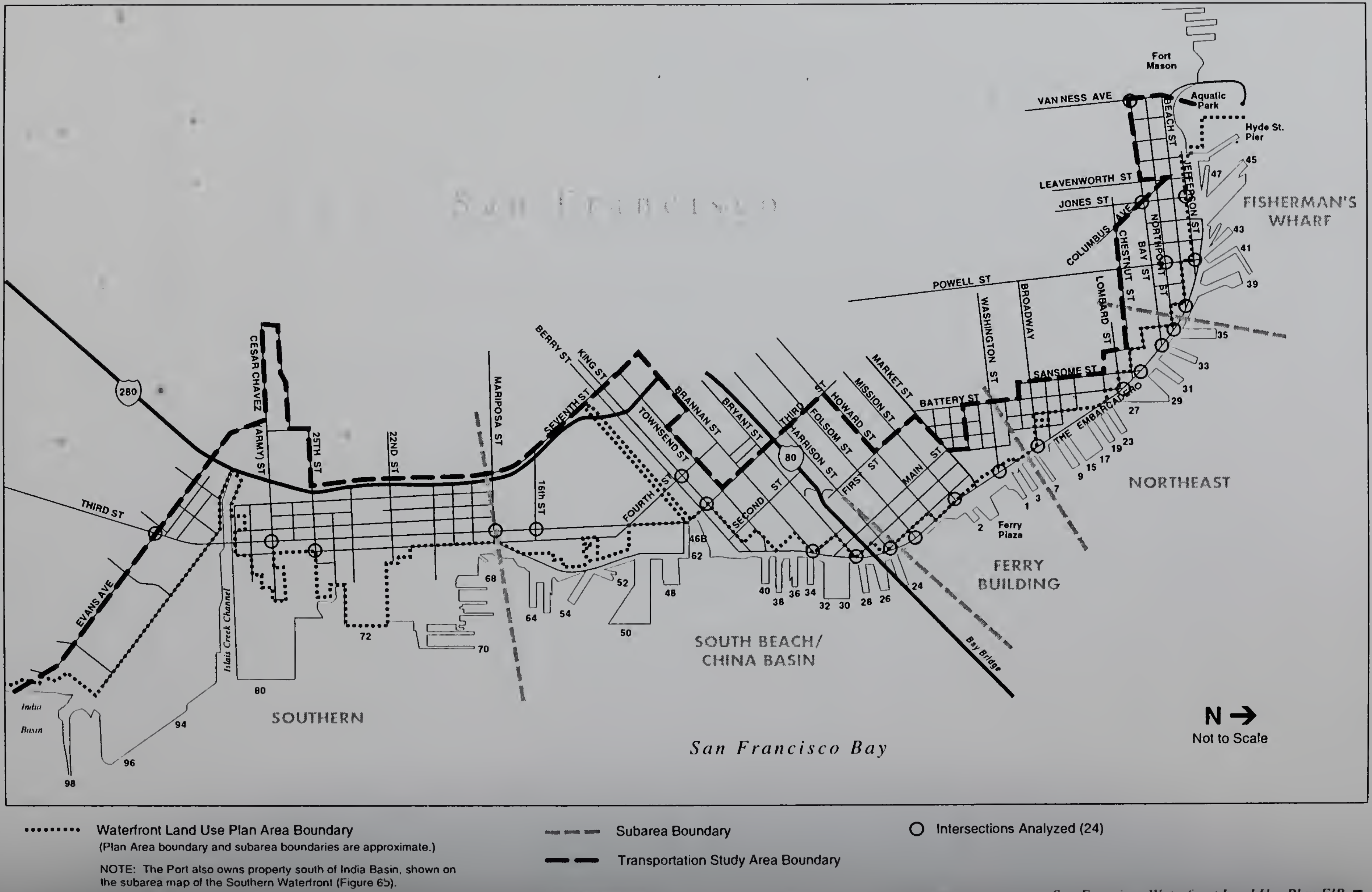
Intersection	Weekday PM Peak Analysis	Saturday Midday Analysis	Date of Count	Data Source
1 ay St. at Van Ness Ave.	✓	✓	Aug. 1994	WSA
2 ay St. at Columbus Ave.	✓	✓	Aug. 1994	WSA
3 efferson St. at Jones St.	✓	✓	Aug. 1994	WSA
4 orth Point at Powell St	✓	✓	Aug. 1994	WSA
5. efferson St. at Powell St.	✓	✓	Aug. 1994	WSA
6. mbarcadero at Beach St.	✓	✓	Aug. 1994	WSA
7. mbarcadero at North Point St.	✓	✓	Aug. 1994	WSA
8. mbarcadero at Bay St.	✓	✓	Aug. 1994	WSA
9. mbarcadero at Sansome St.	✓	✓	1992	Korve(1)
0. mbarcadero at Battery St.	✓	✓	1992	Korve(1)
1. mbarcadero at Broadway	✓	✓	1992	Korve(1)
2. mbarcadero at Washington St.	✓	✓	1992	Korve(1)
3. mbarcadero at Mission St.	✓	N/I	1992	Korve(1)
4. mbarcadero at Folsom St.	✓	N/I	1992	Korve(1)
5. Embarcadero at Harrison St.	✓	✓	1992	Korve(1)
6. Embarcadero at Bryant St.	✓	N/I	1992	Korve(1)
7. Embarcadero at Brannan St.	✓	N/I	1992	Korve(1)
8. 3rd St. at King St.	✓	N/I	1992	ESA
9. 4th St. at King St.	✓	N/I	1992	ESA
0 3rd St. at 16th St.	✓	N/I	Aug. 1994	WSA
1 3rd St. at Mariposa St.	✓	N/I	Aug. 1994	WSA
2 3rd St. at 25th St.	✓	✓	Aug. 1994	WSA
3 3rd St. at Army St.	✓	✓	1993	Korve(2)
4 3rd St. at Evans St.	✓	N/I	1993	Korve(2)

) PBQ&D *Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Structure*, September 22, 1994

) Korve Engineering *Hunters Point Reuse Master Plan*, 1993

/ Not included in the traffic analysis

Wilbur Smith Associates: August 1995



(Plan Area boundary and subarea boundaries are approximate.)

NOTE: The Port also owns property south of India Basin, shown on the subarea map of the Southern Waterfront (Figure 65).

SOURCE: San Francisco Planning Department, December 1994

San Francisco Waterfront Land Use Plan EIR ■

Figure F-4

Transportation Study Area and Analyzed Intersections

Table F-6

ANNUAL GROWTH FACTORS FOR YEAR 2010 PROJECTIONS

(percent)

San Francisco Waterfront EIR

Intersection	PM Peak Hour				Saturday Noon
	SB	WB	NB	EB	All Directions
1. Bay St. at Van Ness Ave.	1.5	1.1	1.5	1.4	0.9
2. Bay St. at Columbus Ave.	1.5	1.1	1.5	1.4	0.9
3. Jefferson St. at Jones St.	---	0.82	1.12	---	0.9
4. North Point at Powell St	1.5	1.1	1.5	1.4	0.9
5. Jefferson St. at Powell St.	---	0.82	1.12	---	0.9
6. Embarcadero at Beach St.	1.12	---	1.12	---	0.9
7. Embarcadero at North Point St.	1.5	---	1.5	1.4	0.9
8. Embarcadero at Bay St.	1.5	---	1.5	1.4	0.9
9. Embarcadero at Sansome St.	*	*	*	*	0.9
10. Embarcadero at Battery St.	*	*	*	*	0.9
11. Embarcadero at Broadway	*	*	*	*	*
12. Embarcadero at Washington St.	*	*	*	*	*
13. Embarcadero at Mission St.	*	*	*	*	N/I
14. Embarcadero at Folsom St.	*	*	*	*	N/I
15. Embarcadero at Harrison St.	*	*	*	*	0.9
16. Embarcadero at Bryant St.	*	*	*	*	N/I
17. Embarcadero at Brannan St.	*	*	*	*	N/I
18. 3rd St. at King St.	---	1.4	1.5	1.1	N/I
19. 4th St. at King St.	1.5	1.4	1.5	1.1	N/I
20. 3rd St. at 16th St.	1.0	1.0	1.0	1.0	N/I
21. 3rd St. at Mariposa St.	1.0	1.0	1.0	1.0	N/I
22. 3rd St. at 25th St.	1.0	1.0	1.0	1.0	0.9
23. 3rd St. at Army St.	1.0	1.0	1.0	1.0	0.9
24. 3rd St. at Evans St.	1.0	1.0	1.0	1.0	N/I

* = Year 2010 traffic volumes interpolated from 2015 forecasts from *TSS/Mid Embarcadero Study*, Korve Engineering.

N/I = Not included in the analysis.

Source: Wilbur Smith Associates; August, 1995 the approximate year in which certain roadway projects would be implemented. These adjusted annualized growth factors were then applied to existing counts to arrive at anticipated volumes for 2010.

To obtain 2010 forecasts at the remaining 15 transportation study area intersections (see Table F-6, p. F-20), growth factors were applied to the existing counts. For study intersections north of Mission Bay, a growth factor was determined by calculating the amount of growth on a per year basis from the existing conditions to the year 2015, using formulas as presented in the *Mid-Embarcadero/TSS EIS/EIR*. The Mid-Embarcadero/TSS traffic forecasts were developed using year 2015 land use data furnished by the San Francisco Planning Department. The Planning Department based the land use data on ABAG projections for employment and population and known approved projects in the study area. This annualized growth rate was applied to the WLUP study intersections through the year 2010. At the three intersections analyzed in the Fisherman's Wharf subarea, this annual growth factor was reduced by 25% since land use development opportunities are limited in this subarea compared to the rest of the waterfront north of Mission Bay, and because regional travel in the North Bay corridor (a portion of which travels through this subarea) has not demonstrated substantial growth in recent years. For study intersections south of Mission Bay, a growth factor of one percent per year was applied to existing counts, as directed in the *Guidelines for Environmental Review: Transportation Impacts*, San Francisco Planning Department, July 1991.

A weekend growth factor was developed using the same methodology as for the weekday P.M. peak hour. For the Saturday midday peak hour, 2010 volumes were obtained from interpolating 2015 projections from the *Mid Embarcadero/TSS* for the two common intersections. The average annual growth factor was determined to be 0.9 for the Saturday midday peak hour. Thus, at the remaining Saturday midday peak hour study intersections the same growth factor was applied.

Existing and future (year 2010) roadway geometries and signalization conditions were obtained from the Mid-Embarcadero TSS and the Department of Parking and Traffic, and assumed for the WLUP transportation analysis. Some level of service improvements were projected despite traffic growth due to improvements planned for some of these intersections. For example, signalization is planned to replace stop-controlled intersections at Jefferson Street at Jones, The Embarcadero at Beach, North Point, Bryant, and Brannan Streets, along with signals for the intersections of King at Third and Fourth Streets. In addition, signal preemptions are planned (for the F-line operation) at The Embarcadero at Broadway and Washington Streets. Lane configuration changes such as left turn lanes from The Embarcadero northbound onto secondary streets will reduce the delay time for northbound traffic. Furthermore, with The Embarcadero improvements planned between Folsom and Broadway, parking lanes would be converted to travel lanes in the peak periods. As a part of the rerouting of traffic that would occur with the completion of The Embarcadero reconstruction projects, many vehicles currently making left turns from The Embarcadero northbound onto Broadway would turn at Washington Street instead. Modifications and improvements in one segment of The Embarcadero could have positive effects for other segments under future conditions.

It was assumed that these 2010 base volumes simulate the future traffic conditions under the No Project Alternative. For Alternatives A and B, the net increase (or decrease in some traffic zones) in project trips between these Alternatives and the No Project Alternative were added to the future base volumes. For the local transportation analysis, intersection levels of service were calculated for each study intersection for the No Project Alternative, Alternative A and Alternative B. Volume-to-capacity ratios were calculated for the regional locations.

Incident Analysis

Levels of service presented in the Waterfront Land Use Plan EIR for the local roadway network reflect normal conditions. The issue of "normal" future traffic conditions versus "incident" traffic conditions have been addressed qualitatively. An incident condition results when a traffic accident or vehicle breakdown occurs causing backups and traffic delays. An incident condition can substantially affect traffic when it occurs at peak traffic periods when congested conditions already exist. When an incident occurs on a freeway segment, the incident creates backups on the freeway, restricts the flow rates at the on-ramps, and causes backups and further congestion on City streets. Incidents on I-80 (and the Bay Bridge) are of the most concern with respect to the WLUP. There is a high probability of incidents occurring on the Bay Bridge in the P.M. peak hour resulting in backups and congested conditions on City streets. The San Francisco Department of Parking and Traffic has estimated that on average, P.M. peak hour queues on First Street backing up to Mission Street occur seven weekdays a month, or 33% of the time due to incident congestion on eastbound I-80 and southbound U.S. 101. During five out of these seven days, or 25% of the time, queues back up to Market Street and extend northward onto Battery. Lower average speeds in the vicinity of the on ramps would also occur due to congestion on the roadways approaching the on-ramps.

Transit Analysis

The transit analysis takes into consideration both regional and local transit. The transit analysis assesses the Project Area in terms of existing and planned transit service capacities compared to existing and forecast ridership demand. Analysis of transit impacts focuses on the increase in transit patronage in the outbound direction during the weekday P.M. peak hour generated by the Project Alternatives. The level of service (LOS) concept has been applied to transit. The LOS used pertains to the number of passengers per vehicle seats, and has a perspective of passenger comfort. The LOS for transit is based on total number of passengers compared to the number of seats for the bus or rail car used. Table F-7 reflects comfort levels on buses where short trips at relatively low speeds can comfortably accommodate standees. These LOS criteria and respective LOSs were applied to the local (Muni) transit analysis. Table F-8 was used to describe the levels of service projected for BART. These passenger levels of service provide a reasonable balance between passenger comfort and rail transit operating economy.

Regional transit analysis is graphically presented for the same three regional screenlines as used for regional highway analysis (see Figure F-1, Regional Screenlines, p. F-10), although the precise points of measurement vary slightly: the East Bay (Bay Bridge, BART Transbay Tube, and the Bay itself for ferries) for transbay transit travel; the North Bay (Golden Gate Bridge) for rips to the North Bay; and the South Bay (San Francisco-San Mateo County line for SamTrans, Fourth and Townsend Street terminal for CalTrain, and Civic Center BART station) for trips to he Peninsula. The existing regional transit conditions are based upon available screenline nformation as provided by MTC and the transit operators. Ferry service has been considered part of the transit mix.

TABLE F-7: PASSENGER LOADING STANDARDS AND LEVELS OF SERVICE FOR BUS TRANSIT VEHICLES (5-Seat, 340 Sq. Ft. Bus)

Peak-Hour Level of Service	Passengers	Approx. Sq. Ft/ Pass.	Pass./Seat (Approx.)
A	0 to 26	13.1 or more	0.00 to 0.50
B	27 to 40	13.0 to 8.5	0.51 to 0.75
C	41 to 53	8.4 to 6.4	0.76 to 1.00
D	54 to 66	6.3 to 5.2	1.01 to 1.25
E (Max. scheduled load)	67 to 80	5.1 to 4.3	1.26 to 1.50
F (Crush load)	81 to 85	< 4.3	1.51 to 1.60

SOURCE: Transportation Research Board, "Operations Level Methodology," Highway Capacity Manual, Table 12-5, Special Report 209, 1985.

TABLE F-8: PASSENGER LOADING STANDARDS AND LEVELS OF SERVICE FOR URBAN RAIL TRANSIT VEHICLES

Peak-Hour Level of Service	Approx. Sq. Ft./Pass.	Approx. Pass./Seat
A	15.4 or more	0.00 to 0.65
B	15.2 to 10.0	0.66 to 1.00
C	9.9 to 7.5	1.01 to 1.50
D	6.6 to 5.0	1.51 to 2.00
E-1	4.9 to 4.0	2.01 to 2.50
E-2 (Maximum scheduled load)	3.9 to 3.3	2.51 to 3.00
F (Crush load)	3.2 to 2.6/a/	3.01 to 3.80

NOTE: Fifty percent standees reflects a load factor of 1.5 passengers per seat.

/a/ The maximum crush load can be realized in a single car, but not in every car on the train.

SOURCE: Transportation Research Board, "Operations Level Methodology," Highway Capacity Manual, Table 12-6, Special Report 209, 1985.

The East Bay screenline is served by AC Transit, BART, the Alameda-Oakland Ferry, and the Harbor Bay Maritime ferry service. Additional ferry services to the East Bay are assumed for 2010, based on projections made by MTC. Transit along the North Bay screenline is provided by Golden Gate Transit, which provides bus and ferry service between Sonoma and Marin Counties, and San Francisco including the Study Area, and the Blue & Gold Fleet ferry service between Pier 1/2 and Tiburon. The South Bay screenline transit services would be provided by SamTrans, BART, and CalTrain.

Based upon the travel distribution and modal assignment, the transportation analysis shows that very moderate numbers of new transit trips would be generated on any of the regional operators by any of the Project Alternatives. In nearly all cases, the demand numbers any Alternative is likely to generate on an individual carrier is small enough (in the range of 20-80 peak hour riders) to be considered within the realm of normal daily variations in patronage. For BART, however, the amount of new demand relative to reserve capacity that could potentially be generated by the Project may be higher than what would be considered normal daily fluctuations. Therefore BART is the only regional transit operator for which future year 2010 demand and capacity data were calculated and analyzed. Existing BART data was provided by BART staff.[1] Future 2010 capacity and demand estimates for BART were provided by BART staff.

Local transit trips are those which are made on the San Francisco Municipal Railway (Muni) lines. Most of these trips remain within the City and County of San Francisco, but some are also connections made from various points within the Study Area to access regional transit carriers. San Francisco has been divided into four “quadrants” (Northeast, Northwest, Southeast and Southwest) referred to as screenlines, corresponding to the four Superdistricts that MTC has identified within San Francisco for reporting demographic and economic data. A graphic representation of the four Muni screenlines is shown on Figure F-5.

The Muni screenlines used for this analysis were developed in the early 1980's in previous EIRs, and generally measure radial lines carrying riders from the downtown to other parts of the City, and represent the vast majority of both demand and service on Muni in the peak hours. The City has been divided into four “quadrants” (Northeast, Northwest, Southeast and Southwest) which correspond to the four MTC Superdistricts within San Francisco. These established screenlines measure conditions on the combined Muni lines traveling from the downtown, into each of the four quadrants. It should be noted that the points of measurement for the screenlines do not actually follow the alignments schematically shown on Figure F-5. Rather, the screenlines reflect the actual Maximum Load Point for each Muni line crossing a screenline, which may occur for individual lines at some point on either side of the schematic lines drawn for graphic representation.

Although these screenlines were developed primarily for analysis of impacts to Muni resulting from development in the greater downtown, they are relevant for analysis of impacts to Muni resulting from Waterfront Land Use Plan development as well, despite the fact that they do not generally conform to the Project Area geographic boundaries. For example, trips made on Muni from the northern portion of the Project Area to the Southeast sector of San Francisco would pass through the downtown and therefore through the Southeast screenline, and trips made by much of the Project Area to the Northeast or Northwest sectors of the City would either travel directly from the downtown area or make connections to lines serving those sectors within the downtown

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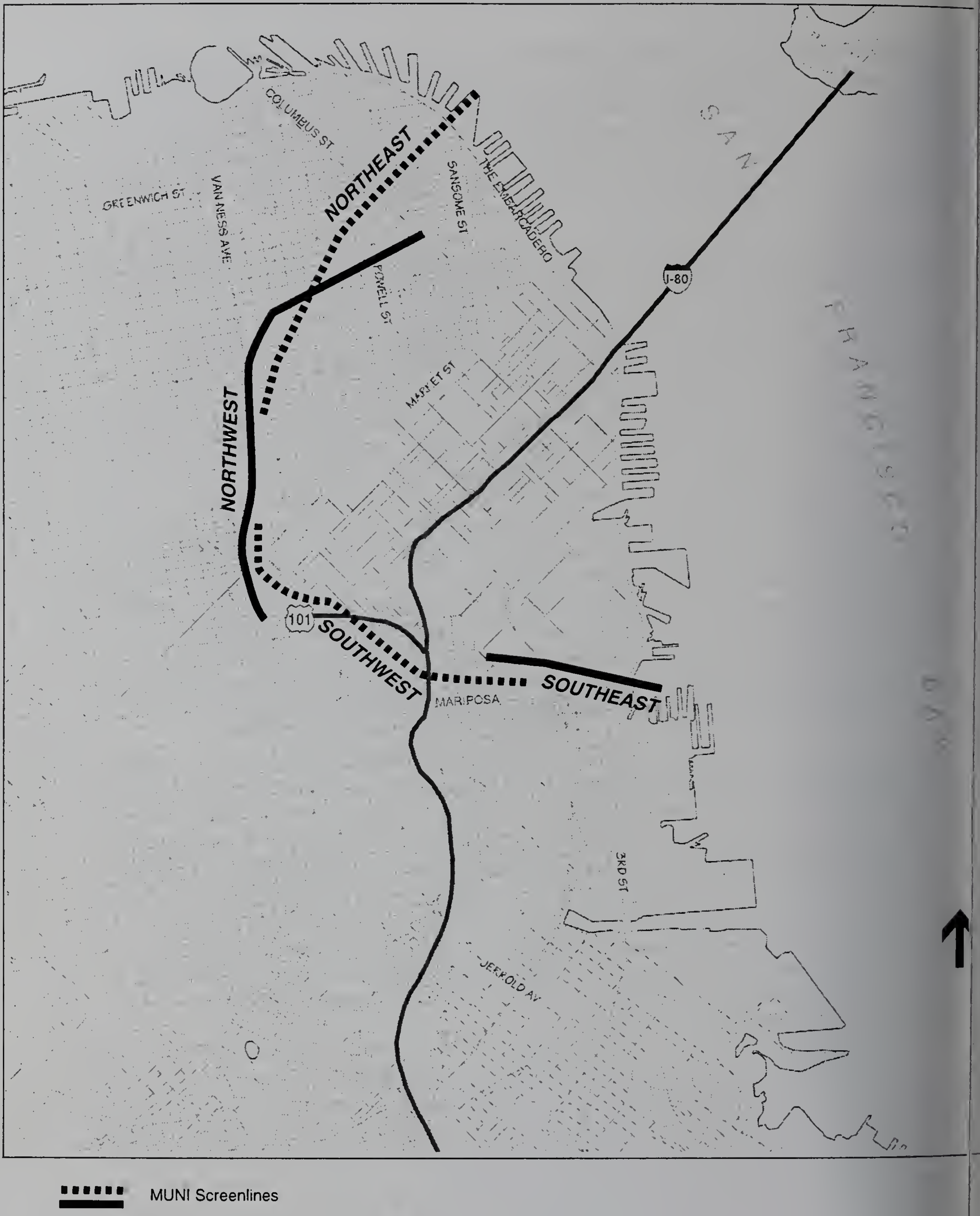
[1] Pam Herhold, BART, telephone conversation November 27, 1995.



SOURCE: Mission Bay Environmental Impact Report, 1988

Figure -5

Muni Transit Screenl es

area, and therefore cross the appropriate screenlines. The Muni trips measured at the four San Francisco screenlines represent both travel from the Project Area to other parts of the City, and travel from various parts of the City into the Project Area. While this includes trips both inbound to the Project Area as well as outbound from the Project Area, for the purpose of measuring impacts, the trips are measured at the screenlines in the direction of outbound from the downtown during the P.M. peak hour, the peak direction of travel and patronage loads for the Muni system. Ridership and capacity data are reported in the *1994 Downtown Plan Monitoring Report* by these four screenlines. Existing ridership and capacity data for Muni were taken from the San Francisco Planning Department's *1994 Downtown Plan Monitoring Report.* These data are reported for the P.M. peak hour.

The 1994 *Downtown Plan Monitoring Report* concluded that Muni has experienced losses in ridership since 1985, with the Northeast and Southeast sectors experiencing the highest percentages of these losses. However, the overall scheduled capacity during the peak travel periods has not changed. Scheduled capacity is the number of seats that operations planning calls for to provide transit services on a programmed basis. There is a substantial difference between scheduled and actual seating capacity as shown in Table F-9, extracted from the *1994 Downtown Plan Monitoring Report.* Actual seating capacity was reported by the San Francisco Planning Department from a one-day spot survey conducted by the Planning Department. This one-day survey by the Planning Department may or may not be representative of an average day of actual seating capacity. The report further states that Muni has not been able to provide scheduled capacity due to equipment breakdowns, under staffing, and a lack of funds to provide equipment, maintenance, and staffing needed to support the transit schedules.

For the cumulative development scenarios, the analysis assumed that only the planned projects appearing in Muni's *Short-Range Transit Plan & Capital Improvement Program, 1995 - 2005,* (October, 1995) would be in place by the analysis year 2010. The projected capacity for the Muni system in the year 2010 for the P.M. peak hour is based on the existing scheduled P.M. peak hour capacity (as reported in the *1994 Downtown Plan Monitoring Report*), plus additional capacity as provided with the implementation of the capital improvement program, minus any reductions in service capacity as a result of substituting types of vehicles or types of service. For example, although the F-line along Market Street, and along The Embarcadero to the Fisherman's Wharf subarea represent an increase in capacity at both the Southwest and Northeast screenlines over base (1993) conditions, the 8-Market and 32-Embarcadero lines will be eliminated when F-line service is fully initiated. Therefore, actual projected capacity increases at these screenlines indicate the net increase in capacity, once service substitutions are taken into account. Although the South Bayshore light rail extension project is included in the Baseline assumptions in the 1994 MTC Regional Transportation Plan, it is not assumed in the capacity increases for the Muni Southeast screenline, because the Public Transportation Department and Commission have not yet arrived at a firm decision regarding the preferred alternative for this project or its funding, and hence its timing is still unknown; it is not included in the 1995-2005 Muni SRTP.

The only available Muni forecasts of projected transit ridership were generated more than ten years ago, and were based upon employment and population growth assumptions developed for he Mission Bay EIR. Because of the unexpected downturn in the region's economy, the slowing of employment and population growth, and changes in travel characteristics, these forecasts do not reflect current trends in transit ridership. Therefore, for the purposes of the Waterfront Land Use Plan EIR, cumulative 2010 transit demand for Muni was calculated in the following manner.

TABLE F-9: MUNI CAPACITY IN 1993[1]

	1993 Seats		
PM Peak Hour	Scheduled	Actual	Difference
Muni NE	5,400	4,700	-700
Muni NW	6,700	5,900	-800
Muni SE	5,800	4,800	-1,000
Muni SW	8,500	7,400	-1,100
Muni Total	26,400	22,800	-3,600
PM Peak Period			
Muni NE	10,000	8,600	-1,400
Muni NW	12,500	10,800	-1,700
Muni SE	10,700	9,000	-1,700
Muni SW	15,700	13,800	-1,900
Muni Total	48,900	42,200	-6,700

[1] San Francisco Planning Department, Downtown Plan Monitoring Report, Table 11, 1994.

It was assumed that there is a relationship, which can be quantified, between employment growth in San Francisco and growth in demand for Muni during the P.M. peak. It was further assumed that this relationship would be relatively stable over time. Therefore, the percent increase in San Francisco employment between 1985 and 2000 assumed in the Mission Bay FEIR, and the percent increase in P.M. peak hour Muni demand for each of the four Muni screenlines 1985 to 2000 as assumed in the Mission Bay FEIR, were used as the basis to establish this relationship. The relationship is quantified in terms of ratios expressing the percent employment growth to percent of growth in Muni demand, for each of the four quadrants. These ratios were then adjusted using the percent increase in San Francisco employment between 1993 and 2010 as assumed for the Waterfront Land Use Plan EIR analysis (based on ABAG's *Projections '94*).

The adjustments to the ratios produced revised percentage growth factors for Muni demand by screenline quadrant. These revised growth factors were then applied to the base 1993 Muni demand numbers. Muni's 1995-2005 Short Range Transit Plan (p. 3.5) assumes a flat level of ridership in that 10-year period. This analysis, while extending another five years beyond Muni's projection, assumes a greater level of patronage demand with no increase in capacity (over Muni's assumptions), as a conservative approach to ensure that potential impacts are identified.

Parking Analysis

The parking analysis has been conducted in accordance with the *Guidelines*. The parking analysis was conducted at a program level of detail which focuses on parking impacts for each of the five designated Waterfront Land Use Plan subareas. As such, parking impacts were not analyzed by specific block, seawall lot, pier or land use. The designated subareas include:

- Fisherman's Wharf
- Northeast
- Ferry Building
- South Beach/China Basin
- Southern Waterfront subareas

Parking Inventory

An inventory of existing parking was conducted for the Waterfront Land Use Plan for each subarea by total estimated number of on-street, public off-street, and private off-street parking spaces. The inventory of existing off-street public and private parking was developed based on information from the Planning Department and the Port of San Francisco, and information contained in existing available reports and a review of aerial photographs. These reviews were verified with field checks.

A random survey of five off-street parking structures, five off-street parking lots and five blocks with on-street parking, including both block faces, was conducted on Thursday, February 9, 1995, between 10:00 A.M. and 11:30 A.M. to estimate peak weekday occupancy. Similarly, a random survey of five off-street structures, five off-street lots and five blocks with on-street parking, including both block faces, was conducted on Saturday, February 11, between 1:00 P.M. and 3:00 P.M., to estimate peak weekend occupancy. Field survey information was supplemented with existing parking occupancy information available from the Planning Department or the Port. For locations that are major tourist attractions such as the Fisherman's Wharf subarea and Pier 39, the February parking occupancy rates were adjusted upward to reflect peak summer conditions. These conditions were adjusted to reflect at-capacity conditions of between 90% and 95%.

Parking Demand

Estimated parking demand for the year 2010 was based on land use scenarios by Project subarea for the No Project Alternative, Alternative A, and Alternative B. Long-term and short-term parking demand was estimated at a program level of analysis based on net changes in land use by type and gross square footage for each subarea. Parking demand is estimated based primarily on the projected number of automobile trips generated by the various land uses. At this very broad level presenting "order of magnitude" parking demand, the demand cannot account for possible differences between specific existing uses and future replacement uses that could have higher or lower parking demand characteristics than those assumed in EIR. Estimated parking demand was compared to existing supply and occupancy levels to identify potential parking shortfalls. Parking demand calculations and generation rates contained in the *1991 Guidelines* were used as follows:

- C-3, SOMA, and Mission Bay Projects Parking Demand Rates[2] were used for the subareas of:
    - Fisherman's Wharf
    - Northeast Waterfront
    - Ferry Building
    - South Beach/China Basin

- Non-Downtown Parking Demand Rates[3] were used for:
    - Southern Waterfront subarea.

The *Guidelines* have no accessory parking demand factors for industrial and manufacturing uses. The parking demand for the Southern Waterfront subarea was calculated based on the factors used for "non-downtown and residential projects" which are based on commercial and residential parking needs. Therefore, parking demand for the Southern Waterfront subarea may be over estimated.

Code-Required Parking

Potential amounts of accessory parking as may be required for new development by the Planning Code have been estimated and given in a range. The lower end of the range is based on net changes in land uses in the Project Area with the assumption that existing land uses provide 100% Code-required accessory parking (as shown in Table F-10), and these land uses would not continue (usually because they would be removed or replaced by new uses). Thus, full Code-required parking for uses that would not continue were subtracted from Code-required parking for new uses to yield the low end of net potential Code-required parking. The upper end of the range is based on total new land uses without subtracting existing land uses that would not continue; and assumes that existing uses do not currently provide Code-required accessory parking. These assumptions are necessary because it is not known how much of the existing parking in the Project Area constitutes Code-required accessory parking.

The range of Code-required accessory parking that could be provided does not take into account a number of potential variables which could alter amounts provided. For example, the ranges express Code-required accessory parking as the minimum amount required although up to 150% of minimum is allowable as accessory parking. Additionally, individual projects approved as Planned Unit Development or with conditional use authorization may allow adjustments to Code requirements such that they provide an amount estimated to be the actual projected demand for the proposed project. Planning Code Section 161(f) specifically provides for the possibility of reductions in Code-required parking in the Northern Waterfront Special Use District No. 1.

Pedestrian/Bicycle Analysis

The pedestrian/bicycle analysis focused on potential conflicts created by each Project Alternative. A qualitative analysis of pedestrian volumes, bicycle volumes and areas of conflicts was prepared. The analysis concentrated on primary crossing areas along The Embarcadero and on areas of very heavy pedestrian activity along the waterfront, i.e., Hyde Street Pier, the Ferry

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[2] Appendix 5.2, 1991 *Guidelines*.

[3] Appendix 5.1, 1991 *Guidelines*.

TABLE F-10: LAND USE CATEGORIES AND CORRESPONDING MINIMUM CODE REQUIRED PARKING

Land Use Category - Waterfront Land Use Plan	Planning Code, Article 1.5 Minimum Off-Street Code-Required Parking [1]
Local Retail [2]	Retail space (1:500)
Regional Retail	Other retail space (1: 500)
Visitor and Speciality Retail	Retail space (1:500)
Assembly/Entertainment/Recreation	Other retail space (1:500)
Trade, Promotion Center	Other retail space (1:500)
Office, R&D	Other business office (1: 500)
Warehouse, Light Industrial	Other manufacturing and industrial uses (1:1,500)
General Industry	Other manufacturing and industrial uses (1:1,500)
Cargo Shipping	Other manufacturing and industrial uses (1:1,500)
Ship Repair	Other manufacturing and industrial uses (1:1,500)
Fishing Industry	Other manufacturing and industrial uses (1:1,500)
Cruise Ship	None
Ferry, Excursion	Other retail space (1:500)
Water Recreation	None
Maritime Support	Other manufacturing and industrial uses (1:1,500)
Historic Ships	Arts activities and spaces (1:2,000)
Hotels	Hotel in districts other than NC (1:16 bedrooms)
Residential	Dwelling, (1:1 unit)

[1] (Spaces: Square Feet)

[2] Square footage represents the occupied floor area as defined in Section 102.10 of the Planning Code. For commercial and retail uses, it is assumed that occupied floor area averages about 85% of gross floor area. The floor area figure for land use assumptions by Project Alternative in the WLUP EIR represent gross floor area; therefore, square footage for commercial and retail uses was reduced by 15% to account for occupied floor area.

SOURCE: City and County of San Francisco, *Municipal Code, Part II, Chapter II Planning Code*, Table 151 "Off-street Parking Spaces Required," 1995.

Building/Ferry Terminal and other areas of extensive pedestrian oriented development. Potential conflicts between pedestrian/ bicycle with traffic, loading vehicles, and trucks were examined.

Goods Movement Analysis

For the freight analysis, restrictions on regional truck movements and areas of significant freight movement were identified. Each Alternative was evaluated in terms of additional (new) conflicts of freight vehicles with traffic, transit, pedestrians and bicycles. Distinctions were made between different classes of freight vehicles using data from Appendix 7 of the 1991 *Guidelines for Environmental Review: Transportation Impacts.* Freight data were obtained from the Port and existing studies.

D. FUTURE TRANSPORTATION FACILITIES AND SERVICES

The implementation and build out of the Waterfront Land Use Plan would occur over a long period of time. It requires long-range planning that evaluates and recommends the types and magnitudes of infrastructure and services that would be needed to support an implementation program. The traffic analysis for the Waterfront Land Use Plan, therefore, incorporates some assumptions about future transportation projects and improvements. Those improvements are founded upon stated objectives and priorities established in transportation plans and policies for the City and County of San Francisco and the Bay Area region.

The transportation improvements assumed in the impact analysis for the year 2010 are those that are "reasonably assured" capacity increases. A discussion of the planning and priority process for regional transportation improvements follows.

The definition of the list of highway and transit facilities and services assumed to exist by the year 2010 is based on the formal transportation planning and programming process that already exists to determine priorities for funding capital projects, operations and maintenance. This formal process was established by federal mandate for all metropolitan areas so that each metropolitan planning organization would prepare a long-range regional transportation plan and a supporting five- or ten-year budget. The nine-county Bay Region established the Metropolitan Transportation Commission (MTC) to prepare the regional planning and programming documents required by U. S. Department of Transportation to approve federal funding for transportation projects. The State legislature also gave MTC powers to approve for federal or State funding those projects that the Commission determines to be in conformance with the MTC's *Regional Transportation Plan (RTP)*. It is for this reason that the list of projects considered to provide "reasonably assured capacity" are all described and included in the latest version, the *1994 Regional Transportation Plan for the San Francisco Bay Area.* Capital projects not included in the *RTP* cannot receive State or federal funds for preliminary engineering, design, right-of-way acquisition, construction, or equipment purchase.

The *1994 RTP* responds to new federal mandates contained in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Clean Air Act Amendments of 1990. These mandates require that long-range metropolitan plans only include projects that can actually be delivered with funds expected to be available over the 20-year time frame of the plan. These laws also stipulate that projects identified in an RTP collectively assist in attaining and maintaining federal air quality standards for the region (referred to as demonstrating "conformity"). The RTP estimates spending $74 billion on transportation investments along with operating and maintenance costs over the next 20 years. Approximately 76% of these funds are needed to sustain the existing system while 24% is for system improvements. The RTP investments through the year 2013 which affect transportation along the San Francisco waterfront are noted below. Other assumptions have been made and are noted relative to long-range service expansions and modifications within the study area.

Highways U.S. Highway 101 is assumed to be widened to eight lanes through San Mateo, Santa Clara and Marin Counties. High-Occupancy-Vehicle (HOV) lanes are assumed to be in place with the widening of U.S. Highway 101 in Marin and Santa Clara Counties. In San Francisco, Interstate 280 is assumed to be repaired and opened, with new touchdown ramps on King Boulevard at Fifth Street. This will reinforce King Boulevard and The Embarcadero as a route connecting to the regional highway system. No additional lane capacity is assumed for the Bay Bridge and the Golden Gate Bridge.

Transit Muni's service capacity is projected to moderately increase with the completion of the Metro Turnback project, extensions of Muni Metro south to Sixth Street in the Mission Bay area, the F-Embarcadero electric streetcar extension to Fisherman's Wharf, and deployment of new trolleys and articulated coaches. In response to the extension projects, changes will need to be made to some of the coach service. The 80X with express service to Caltrain will be eliminated, while the 81X and 82X will be realigned. Existing Routes 8 and 32 will also be eliminated.

BART service capacity and service is expected to increase with continued technological improvements in automatic train control (permitting decreased headways from 3.75 to 2.25 minutes), deployment of additional "C" cars, opening of the Colma BART Station, and extension of BART to the San Francisco International Airport. BART extensions to Pittsburg and Dublin are also assumed to be in place.

Caltrain provides Peninsula commute service to downtown San Francisco. A 1.5-mile extension to downtown from the existing Fourth and Townsend Streets station is assumed for the future along with increased service to accommodate projected increases in ridership demand. San Mateo County Transit District (SamTrans) provides bus service from the Peninsula. These service levels are assumed to remain at existing levels for the future due to the assumed rail extensions for both BART and Caltrain.

Alameda-Contra Costa County Transit (AC Transit) is expected to continue its transbay services to meet travel demand in the future. The Golden Gate Bridge, Highway and Transportation District (GGBHTD) will continue to provide transit services between Marin, Sonoma and San Francisco Counties. It is assumed that GGBHTD service within San Francisco will remain the same, while ferry services will increase from the current 23 daily round trips between San Francisco and Larkspur/Sausalito to at least 29 daily trips. Other ferry services with destinations to Tiburon, Vallejo, Alameda and Harbor Bay are provided by the Blue & Gold Fleet from the Ferry Building. These services are also projected to increase to approximately 25 daily round trips within the 20-year time frame.

APPENDIX G: BIOLOGICAL RESOURCES

TABLE G-1: TYPICAL BIRDS OF THE SAN FRANCISCO BAY WATERFRONT/a/

Common Name	Scientific Name	High Count/
Grebes, Loons		
Western grebe/c/	Aechmophorus occidentalis	26
Clark's grebe/c,d/	Aechmophorus clarkii	1
Horned grebe/d/	Podiceps auritus	4
Eared grebe	Podiceps nigricollis	2
Pied-billed grebe/c,d/	Podilyumbus podiceps	
Red-throated loon/c,d/	Gavia stellata	1
Common loon/c,d/	Gavia immer	2
Cormorants and Pelicans		
Brown pelican/d/	Pelecanus occidentalis	21
Double-crested cormorant/c,d/	Phalacrocorax auritus	36
Brandt's cormorant/d/	Phalacrocorax penicillatus	6
Pelagic cormorant/d/	Phalacrocorax pelagicus	2
Herons		
Great blue heron/c,d/	Ardea herodias	2
Great egret/c,d/	Casmerodius albus	3
Snowy egret/d/	Egretta thula	2
Black-crowned night heron/c,d/	Nycticorax nycticorax	17
Green-backed heron/e/	Butorides virescens	NA
Waterfowl		
Mallard/c/	Anas platyrhynchos	
Northern pintail	Anas acuta	
Cinnamon teal	Anas cyanoptera	
American wigeon	Anas americana	
Northern shoveler	Anas clypeata	
Canvasback	Aythya valisineria	
Greater scaup/d/	Aythya marila	50
Lesser scaup/d/	Aythya affinis	7
Ruddy duck/d/	Oxyura jamaicensis	1
American coot/c/	Fulica americana	
Surf scoter/c,d/	Melanitta perspicillata	1,240
Bufflehead/d/	Bucephala albeola	3
Common goldeneye/d/	Bucephala clangula	10
Barrow's goldeneye/d/	Bucephala islandica	6

TABLE G-1: TYPICAL BIRDS OF THE SAN FRANCISCO BAY WATERFRONT/a/ (Continued)

Common Name	Scientific Name	High Count/b/
Shorebirds		
Killdeer/c,d/	Charadrius vociferus	3
Black-bellied plover/d/	Pluvialis squatarola	1
Long-billed curlew	Numenius americanus	
Willet	Catoptrophorus semipalmatus	
Greater yellowlegs	Tringa melanoleuca	
Least sandpiper/d/	Calidris minutilla	23
Dunlin	Calidris alpina	
Short-billed dowitcher	Limnodromus griseus	
Spotted sandpiper/d/		2
Sanderling/d/		150
Western sandpiper	Calidris mauri	
Marbled godwit	Limosa fedoa	
American avocet	Recurvirostra americana	
Black-necked stilt	Himantopus mexicanus	
Gulls and Terns		
Glaucous-winged gull/c,d/	Larus glaucescens	825
Herring gull/d/	Larus argentatus	2
California gull/c,d/	Larus californicus	10
Ring-billed gull/c,d/	Larus delawarensis	4
Bonaparte's gull/c,d/	Larus philadelphia	1
Heermann's gull/c,d/	Larus heermanni	3
Western gull/c,d/	Larus occidentalis	565
Mew gull/c,d/	Larus canus	1,375
Thayer's gull/d/	Larus thayer	3
Forster's tern/d/	Sterna forsteri	2
Caspian tern/e/	Sterna caspia	NA
Kingfishers		
Belted kingfisher/c,d/	Ceryle alcyon	3
Raptors		
American kestrel	Falco sparverius	
ongbirds		
House sparrow/c,d/	Passer domesticus	35
House finch/c,d/	Carpodacus mexicanus	17
ong sparrow	Melospiza melodia	
uropean starling/c,d/	Sturnus vulgaris	370
Northern mockingbird/c,d/	Mimus polyglottos	1
rewer's blackbird/c,d/	Euphagus cyanocephalus	2
lack phoebe/d/	Sayornis nigricans	1

(continued)

TABLE G-1: TYPICAL BIRDS OF THE SAN FRANCISCO BAY WATERFRONT/a/ (Continued)

Common Name	Scientific Name	High Count/b
Songbirds (continued)		
American crow/d/	Corvus brachyrhynchds	1
Common raven/d/	Corvus coray	1
Yellow rumped warbler/d/	Dendroica coronata	5
Palm warbler/d/	Dendroica palmarum	2
White crowned sparrow/d/	Zonotrichia leucophrys	4
Golden crowned sparrow/d/	Zonotrichia atricapilla	1
Western meadowlark/d/	Sturnella neglecta	2
Pine siskin/d/	Carduelis pinus	1
American goldfinch/d/	Carduelis tristis	1
Barn swallow/e/	Hirundo rustica	NA
Red-winged blackbird/e/	Agelaius phoeniceus	NA
Anna's hummingbird/e/	Calypte anna	NA
American robin/e/	Turdus migratorius	NA
Doves, pigeons		
Rock dove (city pigeon)/c,d/	Columba livia	57
Mourning dove/c,d/	Zenaida macroura	5

NA - Not available.

/a/ Unless otherwise noted, data from CH_2M Hill Engineers, 1983, Mission Bay Proje EIR, prepared for Jefferson Associates.
/b/ Highest count observed during Audubon counts.
/c/ Observed during on-site bird censuses conducted by Environmental Scien Associates on February 18 and 26 and March 14, 1986.
/d/ Observed during Audubon bird counts, conducted by Alan Hopkins, September 1987 February 1988.
/e/ Observed by Alan Hopkins subsequent to his census conducted for the Mission Cre Conservancy.

SOURCE: Environmental Science Associates, Inc.

TABLE G-2: COMMON MARINE, SPORT, AND COMMERCIAL FISHES OF SAN FRANCISCO BAY

Common Name	Scientific Name	Use
arks, Skates and Rays		
Sixgill cowshark	Hexanchus griseus	--
Sevengill cowshark	Notorynchus maculatus	--
Brown smoothhound	Mustelus henlei	--
Leopard shark	Triakis semifasciata	--
Soupfin shark	Galeorhinus zyopterus	--
Spiny dogfish	Squalus acanthias	--
California skate	Raja inornata	Commercial
Big skate	Raja binoculata	Commercial
Bat ray	Myliobatis californica	--
ooling Pelagic, Bait and Forage Fishes		
Pacific sardine	Sardinops caeruleus	Commercial
Pacific herring/a/	Clupea harengus pallasii	Commerical
Ocean northern anchovy	Engraulis mordax mordax	Commerical
Bay northern anchovy/a,b/	Engraulis mordax nanus	--
Surf smelt	Hypomesus pretiosus	Comm., sport
Whitebait smelt	Allosmerus elongatus	--
Night smelt/b/	Spirinchus starksi	Commercial
Jacksmelt	Atherinopsis californiensis	Commercial
Topsmelt	Atherinops affinis	Commercial
tfishes		
English sole/b/	Parophrys vetulus	Commercial
Petrale sole	Eopsetta jordani	Commercial
Dover sole	Microstomus pacificus	Commercial
Rex sole	Glyptocephalus zachirus	Commerical
Pacific sanddab	Citharichthys sordidus	Commercial
Speckled sanddab	Citharichthys stigmaeus	Comm., sport
Starry flounder	Platicthys stellatus	Comm., sport
Diamond turbot	Hypsopsetta guttulata	Commercial
Curlfin turbot	Pleuronichthys decurrens	Commercial
Pacific halibut	Hippoglossus stenolepis	Commercial
Arrowtooth halibut	Atheresthes stomias	Commercial
California halibut/b/	Paralichthys californicus	--
tom Fishes		
Pacific tomcod/b/	Microgadus proximus	--
Staghorn sculpin/b/	Leptocottus armatus	--

ntinued)

TABLE G-2: COMMON MARINE, SPORT, AND COMMERCIAL FISHES OF SAN FRANCISCO BAY (Continued)

Common Name	Scientific Name	Use
Bottom Fishes (continued)		
Bay goby/b/	Lepidogobius lepidus	--
Pipefish/b/	Syngnathus sp.	--
Saltwater Perch		
Walleye surfperch	Hyperprosopon argenteum	Comm., sport
White seaperch	Phanerodon furcatus	Commercial
Rubberlip perch	Rhacochilus toxotes	Comm., sport
Pile perch	Rhacochilus vacca	Comm., sport
Black perch	Embiotoca jacksoni	Sport
Striped seaperch	Embiotoca lateralis	Sport
Calico surfperch	Amphistichus koelzi	Comm., sport
Barred surfperch	Amphistichus argenteus	Sport
Redtail surfperch	Amphistichus rhodoterus	Comm., sport
Silver surfperch	Hyperprosopon ellipticum	Comm., sport
Rainbow seaperch	Hypsurus caryi	Comm., sport
Shiner perch/a,b/	Cymatogaster aggregata	Comm., sport
Anadromous Fish		
Striped Bass	Morone saxatilis	Sport
Chinook Salmon	Oncorhynchus tshawytscha	Comm., sport

/a/ Collected in Mission Creek west of Fourth Street Bridge by otter trawl (CH$_2$M Hil 1979).

/b/ Collected in Mission Creek east of Third Street Bridge by otter trawl (CH$_2$M Hil 1979).

SOURCE: CH$_2$M Hill Engineers, 1983, modified by Environmental Science Associates.

APPENDIX H: HAZARDOUS MATERIALS REGULATORY FRAMEWORK

A. REGULATORY BACKGROUND

Hazardous materials handling and hazardous waste disposal are subject to numerous laws and egulations intended to protect health and safety. The U.S. Environmental Protection Agency (U.S. EPA) is the lead agency responsible for enforcing federal regulations that affect public health or the nvironment. The primary federal laws and regulations include: the Resource Conservation and Recovery Act of 1976 (RCRA); the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA); and the Superfund Act and Reauthorization Act of 1986 (SARA). Federal statutes pertaining to hazardous materials and wastes are contained in the Code of Federal Regulations (40 CFR).

The USEPA has delegated much of its regulatory authority to the individual states. The Department f Toxic Substance Control (DTSC) of the California Environmental Protection Agency (Cal EPA) nforces hazardous materials and waste regulations in California, in conjunction with the USEPA. The DTSC is responsible for regulating the management of hazardous substances including the emediation of sites contaminated by hazardous substances. The Regional Water Quality Control Board (RWQCB) is authorized by the State Water Resources Control Board to require groundwater nvestigations when the quality of groundwater or surface waters of the state are threatened and to equire remediation of the site, if necessary. Both of these agencies are part of the Cal EPA.

alifornia hazardous materials laws incorporated federal standards, but are often more strict than ederal laws. The primary state laws include: the California Hazardous Waste Control Law (HWCL), he state equivalent of RCRA; and the California Hazardous Substance Account Act, the state quivalent of CERCLA. State hazardous materials and waste laws are contained in the California ode of Regulations, Titles 22 and 26. The most important hazardous materials laws and regulations e summarized in this section.

. HAZARDOUS MATERIALS MANAGEMENT PLANNING

ate law requires detailed planning to ensure that hazardous materials are properly handled, used, ored, and disposed of, and to prevent or mitigate injury to health or the environment in the event at such materials are accidentally released. Federal laws, such as the Emergency Planning and

Community-Right-to-Know Act of 1986 (also known as Title III of the Superfund Amendments and Reauthorization Act or SARA, Title III) impose similar requirements. These requirements are enforced by the California Office of Emergency Services.

The Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act) requires that any business that handles specified quantities of hazardous materials prepare a Business Plan, which must include the following (*California Health and Safety Code,* §25504):

- details, including floor plans, of the facility and business conducted at the site;
- an inventory of hazardous materials that are handled or stored;
- an emergency response plan; and
- a training program in safety procedures and emergency response for new employees, including an annual refresher course for all employees.

In 1988, the Business Plan Act was amended to include public agencies within the definition of a business, resulting in a requirement for state agencies to submit Business Plans to designated local agencies. As of January 1, 1992, state agencies were also to comply with local regulations implementing the Business Plan Act.

Several agencies within the City are involved in the use and storage of hazardous materials and the disposal of hazardous wastes. The San Francisco Department of Public Health (DPH) is the primary local environmental regulatory agency responsible for enforcement of City, state and federal environmental health codes and regulations. The Hazardous Materials Ordinance (Article 21 of the San Francisco Health Code) requires that any business that handles, sells, stores or uses hazardous materials (in quantities exceeding certain thresholds) must register the hazardous materials by obtaining a Certificate of Registration from DPH. DPH publishes and makes available to all business the City's hazardous materials compliance guidelines and registration forms.

DPH has the authority over monitoring the storage of flammable liquids, which includes underground tanks, and other hazardous materials. DPH maintains records of underground storage tank modifications and releases of hazardous chemicals from storage tanks, and records where toxic chemicals are used, manufactured and/or stored by San Francisco businesses. The DPH also has a memoranda of understanding with the RWQCB that gives the City local oversight authority over hazardous waste remediation activities.

C. UNDERGROUND STORAGE TANKS

The State Water Resources Control Board (SWRCB) also requires permitting of all underground storage tanks (USTs) containing hazardous substances. The California laws regulating USTs are primarily found in the Health and Safety Code; combined with regulations adopted by the State Water Board, these laws comprise the requirements of the state UST program. The laws contain requirements for UST permitting, construction, installation, leak detection monitoring, repairs and upgrades, corrective actions, and closures. In accordance with state laws, counties are required to implement a UST program, and in some cases the county requirements are more stringent than those of the State. Cities are also given the option to implement a UST program. The Regional Water Quality Control Board may also oversee corrective actions.

Underground storage tanks are permitted by the San Francisco Department of Public Health under the Hazardous Materials Ordinance. The San Francisco Fire Department (SFFD), Bureau of Fire Prevention and Investigation, conducts inspections of underground storage tank installations and has permit authority over the storage of flammable liquids. The SFFD also maintains documentation of known above-ground storage tanks. Underground tanks are installed and removed under the guidelines and supervision of DPH and the San Francisco Fire Department.

D. HAZARDOUS MATERIALS WORKER SAFETY

The California Occupational Safety and Health Administration (Cal/OSHA) and the Federal Occupational Safety and Health Administration (Fed/OSHA) are the agencies responsible for assuring worker safety in the handling and use of chemicals in the workplace. In California, Cal/OSHA ssumes primary responsibility for developing and enforcing workplace safety regulations.

Under the authority of the Occupational Safety and Health Act of 1970, the federal government has dopted numerous regulations pertaining to worker safety (contained in the *Code of Federal Regulations,* Title 29). These regulations set standards for safe workplaces and work practices, ncluding the reporting of accidents and occupational injuries. Some OSHA regulations contain tandards relating to hazardous materials handling, including workplace conditions, employee rotection requirements, first aid, and fire protection, as well as material handling and storage. Because California has a federally-approved OSHA program, it is required to adopt regulations that re at least as stringent as federal standards.

Cal/OSHA regulations concerning the use of hazardous materials in the workplace (which are detailed in the *California Code of Regulations,* Title 8) include requirements for employee safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA enforces hazard communication program regulations, which contain training and information requirements, including procedures for identifying and labeling hazardous substances as well as communicating hazard information related to hazardous substances and their handling. The hazard communication program also requires that Material Safety Data Sheets (MSDS) be available to employees and that employee information and training programs be documented. These regulations also require preparation of emergency action plans (escape and evacuation procedures, rescue and medical duties, alarm systems, and emergency evacuation training).

Both federal and state laws include special provisions for hazard communication to employees in research laboratories, including training in chemical work practices. The training must include methods in the safe handling of hazardous materials, an explanation of MSDSs, use of emergency response equipment and supplies, and an explanation of the building emergency response plan and procedures.

Chemical safety information must also be available. More detailed training and monitoring is required for the use of carcinogens, ethylene oxide, lead, asbestos, and certain other chemicals listed in the *Code of Federal Regulations,* Title 29. Emergency equipment and supplies, such as fire extinguishers, safety showers, and eye washes, must also be kept in accessible places. Compliance with these regulations reduces the risk of accidents, worker health effects, and emissions.

The California Fire Code (*California Code of Regulations*, Title 24), which is enforced by the State Fire Marshal, contains state standards for the use and storage of hazardous materials and special standards for buildings where hazardous materials are found. Some of these regulations consist of amendments to *National Fire Codes*, Standard 45, which is regarded as a nationally recognized standard. State Fire Code regulations require emergency pre-fire plans to include training programs in first aid, the use of fire equipment, and methods of evacuation.

The Safe Drinking Water and Toxics Enforcement Act (Proposition 65), implemented by the state Office of Environmental Health Hazard Assessment, includes the following three elements: (1) prohibits discharges of chemicals known to the State of California to cause cancer or to exhibit reproductive toxicity to any source of drinking water; (2) requires that anyone exposed to such chemicals be warned first; and (3) requires that designated employees report any illegal discharge or threatened illegal discharge of a hazardous waste.

Academic-type laboratories in California are required to prepare a Laboratory Chemical Hygiene Plan. The Chemical Hygiene Plan includes description of site-specific response for chemical hygiene and safety, a chemical inventory, site-specific information on chemical receiving, storing, and dispensing, materials safety data sheets, emergency response instructions, site-specific hazardous materials engineering control systems, personal protective equipment, prior approvals required, an employee training checklist and provisions for record keeping, laboratory safety surveys, and establishment and use of specific protocols for performing work and use of hazardous materials. The Chemical Hygiene Plan is in addition to the Injury and Illness Prevention Plan required by SB 198.

E. HAZARDOUS MATERIALS TRANSPORT

The U.S. Department of Transportation has the regulatory responsibility for the safe transportation of hazardous materials between states and to foreign countries. The Department of Transportation egulations govern all means of transportation, except for those packages shipped by mail, which are overed by the U.S. Postal Service regulations. Department of Transportation regulations are ontained in the *Code of Federal Regulations*, Title 49; Postal Service regulations are in Title 39.

very package type used by a hazardous materials shipper must undergo tests which imitate some of he possible rigors of travel. While not every package must be put through every test, most packages ust be able to meet the following generic test: the ability to be (a) kept under running water for one-alf hour without leaking; (b) dropped, fully loaded, onto a concrete floor; (c) compressed from both des for a period of time; (d) subjected to low and high pressure; and (e) frozen and heated ternately.

ommon carriers are licensed by the California Highway Patrol, pursuant to the California Vehicle ode, Section 32000. This section requires licensing of every motor (common) carrier who ansports, for a fee, in excess of 500 pounds of hazardous materials at one time and every carrier, if ot for hire, who carries more than 1,000 pounds of hazardous material of the type requiring placards. ommon carriers conduct a large portion of their business in the delivery of hazardous materials.

nder the Resource Conservation and Recovery Act (RCRA), the U.S. Environmental Protection gency (EPA) set standards for transporters of hazardous waste. In addition, the State of California gulates the transportation of hazardous waste originating or passing through the state; state regulations are contained in the *California Code of Regulations*, Title 13. Hazardous waste must be regularly removed from generating sites by licensed hazardous waste transporters. Transported materials must be accompanied by hazardous waste manifests.

Two state agencies have primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies: the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans).

The CHP enforces hazardous materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provide detailed information to cleanup crews in the event of an accident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP, which conducts regular inspections of licensed transporters to assure regulatory compliance.

F. EMERGENCY RESPONSE TO HAZARDOUS MATERIALS INCIDENTS

Pursuant to the Emergency Services Act, California has developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local government agencies and private persons. Response to hazardous materials incidents is one part of this plan (*California Government Code*, §8574.1 et seq.). The plan is administered by the state Office of Emergency Services, which coordinates the responses of other agencies including the EPA, the CHP, the Department of Fish and Game, the San Francisco Bay Regional Water Quality Control Board, DPH, and the Fire Department.

In addition, pursuant to the Hazardous Materials Release Response Plans and Inventory Law of 1985 (the Business Plan Law), local agencies are required to develop area plans for response to hazardous materials releases. These emergency response plans depend to a large extent on the business plans submitted by entities that handle hazardous materials. An area plan must include pre-emergency planning of procedures for emergency response, notification and coordination of affected government agencies and responsible parties, training, and follow-up.

G. HAZARDOUS WASTE HANDLING REQUIREMENTS

The federal RCRA of 1976 created a major new federal hazardous waste regulatory program that is administered by the EPA. Under the Act, the EPA regulates the generation, transportation, treatment, storage, and disposal of hazardous waste from "cradle to grave." RCRA was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the "cradle-to-grave" system of egulating hazardous wastes. The Hazardous and Solid Waste Act specifically prohibits the use of ertain techniques for the disposal of some hazardous wastes.

Under RCRA, individual states may implement their own hazardous waste programs in lieu of federal equirements as long as the state program is at least as stringent as the federal requirements. The EPA pproved California's program to implement federal regulations as of August 1, 1992.

he Hazardous Waste Control Law is administered by the Department of Toxic Substances Control DTSC). Under the law, the DTSC has adopted extensive regulations governing the generation, ansportation and disposal of hazardous wastes. State requirements differ little from federal laws; oth laws impose "cradle-to-grave" regulatory systems for handling hazardous wastes in a manner at protects human health and the environment. Regulations implementing the state law are enerally more stringent than regulations at the federal level.

tate regulations list 791 hazardous chemicals as well as 20-30 more common materials that may be azardous; establish criteria for identifying, packaging and labeling hazardous wastes; prescribe anagement practices for hazardous wastes; establish permit requirements for hazardous waste eatment, storage, disposal and transportation; and identify hazardous wastes that cannot be disposed in landfills.

nder both state and federal law, hazardous waste manifests must be retained by the generator for a inimum of three years. Hazardous waste manifests list a description of the waste, its intended stination and regulatory information about the waste. A copy of each manifest must be filed with e State. The generator must match copies of hazardous waste manifests with certification notices om the treatment, disposal, or recycling facility.

e Department of Public Works administers the San Francisco Public Works Code, Article 20, "nalyzing the Soil for Hazardous Waste," known as the Maher Ordinance. This ordinance, enacted 1986, requires an investigation of hazardous wastes in the soil as a prerequisite for building permits ien "the permit for a construction project ... involves the disturbance of at least 50 cubic yards of s l..."; in addition, Section 1013 of the Maher Ordinance, Construction on City Property, applies to same requirements or improvements on land under the City's jurisdiction, when no building mit is required.

H. HAZARDOUS BUILDING COMPONENTS - ASBESTOS, PCBS, AND LEAD

ASBESTOS

Federal and state laws and regulations pertain to building materials containing asbestos. Inhalation of airborne fibers is the primary mode of asbestos entry into the body, making friable (easily crumbled) materials the greatest health threat. For this reason, it is regulated both as a hazardous air pollutant under the Clean Air Act and as a potential worker safety hazard under the authority of the Cal/OSHA. These regulations prohibit emissions of asbestos from asbestos-related manufacturing, demolition, or construction activities; require medical examinations for employees engaged in activities that could disturb asbestos; specify precautions and safe work practices that must be followed to minimize release of asbestos fibers; and require notice to federal and local government agencies prior to beginning renovation or demolition that could disturb asbestos. Where demolition or renovation work will involve 100 square feet or more of asbestos-containing materials, State law requires that the contractor be certified and that certain procedures be followed.[1] Section 19827.5 of the California Health and Safety Code, adopted January 1, 1991, requires that local agencies not issue demolition permits until an applicant has demonstrated compliance notification requirements under applicable Federal regulations regarding hazardous air pollutants, including asbestos.

The Bay Area Air Quality Management District (BAAQMD) regulates airborne pollutants, including asbestos, through both inspection and law enforcement. It must be notified ten days in advance of any proposed demolition. Notification includes the names, addresses and phone numbers of operations and persons responsible, including the contractor; description and location of the structure to be renovated/demolished including size, age and prior use, and the approximate amount of friable asbestos; scheduled starting and completion dates of demolition; nature of planned work and methods to be employed; procedures to be employed to meet BAAQMD requirements; and the name and location of the waste disposal site to be used.

According to the BAAQMD Regulation 11, Rule 2, if a structure is to be demolished, friable and potentially friable asbestos must be removed and disposed of properly. Workers and the public could become exposed to asbestos fibers as they become airborne during removal.[2]

The local office of the State Occupational Health and Safety and Health Administration (OSHA) must be notified of asbestos abatement to be carried out. Asbestos contractors must follow the State regulations contained in Title 8 of the California Code of Regulations, Sections 1529 and 341.6 through 341.14 where there is asbestos-related work involving 100 square feet or more of asbestos-containing materials. Asbestos removal contractors must be certified as such by the Contractors Licensing Board of the State of California. Pursuant to California law, the Bureau of Building Inspection (BBI) would not issue the required permit until the applicant has complied with the notice requirements above as well as requirements for proper waste disposal (described below).

Some state regulations on asbestos-containing materials are more stringent than federal regulations. For example, California requires licensing of contractors who conduct abatement activities.

POLYCHLORINATED BIPHENYLS (PCBs)

The *Code of Federal Regulations*, Title 40, contains the Toxic Substances Control Act regulations. This Act restricts the use and storage of PCB-containing transformers (defined as those containing at east 500 parts per million PCBs). The EPA also requires that all PCB-containing transformers be egistered with fire protection personnel, whether in use or in storage, and that they be inspected very three months. If a leak is found, it must be contained to prevent release and exposure, and then e eliminated.

EAD-BASE PAINT ABATEMENT

n accordance with regulatory guidance, lead-base paint waste that has been separated from building aterials (such as delaminated or chipping paint) must be evaluated separately from other building aterials for waste disposal purposes during building demolition. Accordingly, any chipping or elaminated paint would need to be removed before any renovation or demolition activities. epending on the level of lead identified in the paint, it may require disposal as a hazardous waste. uilding materials which still have the paint adhered to them may generally be disposed of as regular onstruction debris, regardless of the lead level in the paint.

he Lead in Construction Standard contained in Title 29 of the Code of Federal Regulations, Section 926.62, applies to the removal of chipping or delaminated lead-base paint. In accordance with this andard, it will be necessary for workers to wear respiratory protection until the work is completed or til an employee exposure assessment can demonstrate that air lead levels during scraping are below e permissible exposure limit (PEL). Other applicable requirements of the standard include worker wareness training, use of protective clothing, provisions for change areas and hand-washing cilities, biological monitoring, and development of a site specific compliance program. California gulations relating to the abatement of lead-base paint are identical to the Federal regulations.

I. IMPAIRED SITE LISTINGS

Listings of contaminated or otherwise impaired sites and installations are not regulations, *per se,* but are part of hazardous waste disclosure and documentation requirements imposed on federal, state, and local agencies. Federally published lists of sites which trace the status of suspected hazardous materials sites or identify sites permitted to generate hazardous wastes include:

- the National Priority List (NPL), which prioritizes sites with significant risk to human health and the environment;
- the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), which tracks contaminated properties identified under CERCLA and SARA;
- the toxic chemical release inventory, which identifies sites which have reported a chemical release to the air, water, or land as required by Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA); the Federal Superfund Liens list (LIENS), which identifies properties where the USEPA has placed a lien because the USEPA has spent money for remedial action or notified the potential of liability for remedial action. This list is compiled by the Office of Enforcement and Compliance Monitoring of the USEPA; and
- the list of facilities permitted to generate hazardous wastes under RCRA.

Site lists maintained by the state include:

- CALSITES, which was previously referred to as the Abandoned Sites Program Information System (ASPIS), and identifies potential hazardous waste sites, which are then screened by the DTSC. Sites on this list which are designated for no further action by the DTSC were not identified by the database review;
- the Annual Work Plan, formerly known as the Bond Expenditure Plan (BEP), which is a site-specific expenditure plan for the appropriation of California Hazardous Substance Cleanup Bond Act of 1984 funds; this list is no longer updated.
- the CORTESE List, which is a compilation of information from various sources listing potential and confirmed hazardous waste of hazardous substance sites, previously maintained by the State Office of Planning and Research. This list is no longer updated.

The RWQCB maintains the following lists identifying hazardous waste sites:

- the Leaking Underground Storage Tanks (LUST) list, which is required by the Health and Safety Code and tracks remediation status of known leaking underground tanks;
- the Waste Management Unit Discharge System (WMUDS) list of sites which tracks waste management units. The list contains sites identified on the Toxic Pits List, which is required by the Toxic Pits Cleanup Act (Katz Bill), and places relatively strict limitations on the discharge

of hazardous wastes into surface impoundments, toxic ponds, pits and lagoons (the RWQCB is required to inspect all surface impoundments annually). The WMUDS list also identifies sites targeted by the Solid Waste Assessment Program where there is a possible risk of solid waste disposal sites (landfills) discharging hazardous wastes, threatening either water or air quality.

The RWQCB also maintains other lists of sites that were not reviewed as part of this program level EIR. These lists should be reviewed to identify potential hazardous waste sites before development of a specific area. The lists include:

- the Non-Tank or Unauthorized Toxic Releases List, which traces the status of other hazardous releases to the environment;
- the Toxic Pits List, which is required by the Toxic Pits Cleanup Act (Katz Bill), and places relatively strict limitations on the discharge of hazardous wastes into surface impoundments, toxic ponds, pits and lagoons (the RWQCB is required to inspect all surface impoundments annually); and
- the Solid Waste Assessment Program, which targets sites and maintains a list of where there is a possible risk of solid waste disposal sites (landfills) discharging hazardous wastes, threatening either water or air quality.

he California Waste Management Board maintains a list of active, inactive or closed solid waste isposal sites and transfer facilities, as legislated under the Solid Waste Management and Resource ecovery Act of 1972. The list is referred to as the Solid Waste Information System (SWIS).

he California Environmental Affairs Agency Office of Hazardous Material Data Management roduces a database containing information on sites which have been issued waste discharge quirements (NPDES permits). These sites are allowed to discharge specified levels of chemicals nder their waste discharge requirements. This list is referred to as the Waste Discharge Systems VDS).

WASTE DISPOSAL REGULATIONS

ll California landfills have been segregated by regulatory authority into the categories of Class I, ass II and Class III facilities. Class I facilities can accept hazardous wastes with chemical levels low the federal land disposal restriction (land ban) treatment standards. Class II and III facilities n accept non-hazardous wastes that meet acceptance criteria determined by the State for organic d inorganic compounds; each landfill has individual acceptance criteria.

The disposal of soil is regulated by the RWQCB and will be predicated on the concentrations of the chemical constituents that are present. Soil with total petroleum hydrocarbon or organic compound concentrations above the detection limit must be disposed of at an appropriate landfill facility or treated to reduce the levels of chemicals in the soil; the concentration of the compounds present will determine the appropriate type of disposal facility. In general, soil with total petroleum hydrocarbon levels up to 100 milligrams per kilogram can be disposed of at a Class III disposal facility. If the concentration is between 100 and 1,000 milligrams per kilogram, it can be disposed of at a Class II disposal facility, and if the concentration is greater than 1,000 milligrams per kilogram, Class I disposal would be required.

The disposal alternative is also predicated on the total and soluble concentrations of metals. Soil with total metal concentrations that are above the Total Threshold Limit Concentration (TTLC) and soluble metal concentrations that are above the Soluble Threshold Limit Concentration (STLC) must be disposed of at a Class I disposal facility or treated.[3] The Class III landfills in the Bay Area commonly have acceptance criteria for lead that are lower than the STLC.

Soil with no concentrations of organic chemicals above detection limit and total and soluble metal concentrations that are below the TTLC and STLC may be used on-site or transported off-site as unrestricted waste.

Lead-base paint would be considered a hazardous waste because the total lead concentration would be greater than the TTLC of 1,000 milligrams per kilogram. It would be necessary to dispose of the paint at a Class I facility.

The California Department of Toxic Substances Control has classified friable, finely divided and powdered wastes containing greater than one percent asbestos as a hazardous waste.[4] A friable waste is one which can be reduced to powder or dust under hand pressure when dry. Non-friable asbestos-containing wastes are not considered hazardous and are not subject to regulation under Title 22, Division 4.5 of the California Code of Regulations. The management of these wastes would still be subject to any requirements or restrictions which may be imposed by other regulatory agencies. The State standard for classification of asbestos wastes is contained in Section 66261.24 of Title 22 of the California Code of Regulations. Asbestos is not currently regulated as a hazardous waste under the RCRA; because of this it is considered a non-RCRA waste. Asbestos wastes totaling more than 50 pounds must be transported by a registered waste hauler to an approved treatment, storage or disposal facility.

Wastes containing asbestos may be disposed of at any landfill which has waste discharge requirements issued by the RWQCB which allow disposal of asbestos-containing materials, provided that the wastes are handled and disposed of in accordance with the Toxic Substances Control Act, the Clean Air Act's National Emission Standards for Hazardous Air Pollutants, and Title 22 of the Code of California Regulations (Division 4.5). The Department of Toxic Substances Control also has treatment standards for asbestos-containing wastes which require submittal of a notification and certification form to the land disposal facility as well as wetting and containment of the asbestos-containing materials.

The owner of properties where hazardous wastes are produced or abatement would occur must have a Hazardous Waste Generator Number assigned by and registered with the California Department of Toxic Substances Control in Sacramento. The contractor and hauler of the material are required to file a Hazardous Waste Manifest which details the hauling of the material from the site and the disposal of the material.

The Bay Area Air Quality Management District (BAAQMD) may impose specific requirements on emediation activities to protect ambient air quality from dust or other airborne contaminants.

NOTES - Hazardous Materials Regulatory Framework

[1] Assembly Bill 2040, Asbestos 1985, Added Section 24223 and Chapter 25 to Division 20 of the Health and Safety Code.

Bay Area Air Quality Management District, Rules and Regulations, Regulation 11, Rule 2, *Asbestos Demolition, Renovation and Manufacturing*, adopted May 1981.

The total threshold limit concentration (TTLC) and the soluble threshold limit concentration (STLC) are criteria used for waste classification purposes. If the waste contains a total concentration of a constituent and a concentration greater than the TTLC, it is considered a hazardous waste. If the total concentration is greater than ten times the STLC, then it would be necessary to perform a waste extraction test to determine the soluble concentration. If the soluble concentration is greater than the STLC, the waste would be considered hazardous. The waste extraction test involves a ten times dilution of the sample; because of this, it would be impossible for the soluble concentration to exceed the STLC unless the total concentration exceeded ten times the STLC.

California Department of Toxic Substances Control, *Fact Sheet, Asbestos Handling, Transport and Disposal*, October 1993.

TABLE H-1: SUMMARY OF SITES IDENTIFIED WITHIN WATERFRONT AREA (San Francisco Waterfront Land Use Plan EIR)

Site No.	Review No.	Site Name	Source	Soil Contamination	Groundwater Contamination	Off Site Contamination	Comments
Fisherman's Wharf Subarea							
1	LOP-5	440 Jefferson Street General Petroleum Resources	Above ground tanks	Petroleum products	Petroleum products	Petroleum products	This site is a former Mobil Oil Bulk Terminal; free product was observed on groundwater; recovery of free product began in 1992 by passive recovery and manual pumping; soil and groundwater remediation planned, awaiting Port approval; soil remediation may leave some petroleum products in place within the capillary fringe.
2	P-20	Fish Alley, Mobil Dock, Fisherman's Wharf, Pier 47	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned paint, oil, batteries, paint thinner, furniture polish, roof coating, grease, empty drums, concresive part B, waste, diesel fuel, detergent, soap, grease, oil filters, epoxy resin previously noted at site
3	P-20	Pier 45, Pier 45B	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned paint, oil, batteries, hydraulic waste, paint thinner, sealer, oil filters previously identified at site
4	BCM-74	350 Beach Street Metro Parking Garage	USTs, coal gasification plant	Petroleum products, PNAs	Petroleum products	Unknown	In 1987 four USTs were reported beneath the sidewalk at this site; free product was identified on the groundwater surface in borings; the site is located within the boundaries of a former coal gasification plant
5	BCM-73 P-10-1B	150 Beach Street Muni Kirkland Bus Yard	USTs	Petroleum products	Petroleum products	Petroleum products	Site is adjacent to Project Area. Two waste oil USTs were abandoned in place in 1987; three diesel USTs were removed from a vault in 1983, vault was sound but diesel was observed in soil and on the groundwater; transmission fluid and diesel have also leaked; in 1987 on site wells contained one to 18 inches of a mixture of diesel and waste oil; product was not observed in off site wells; there are numerous sources of petroleum products noted in the vicinity of the site
6	P-2	Pier 39	Fill materials	Lead	Unknown	Unknown	A Phase I site assessment did not identify potential sources of soil or groundwater contamination from past or present uses or from properties within 100 feet

Site No.	Review No.	Site Name	Source	Soil Contamination	Groundwater Contamination	Off Site Contamination	Comments
Northeast Waterfront Subarea							
7	BCM-15	Seawall Lot 314		Petroleum products	Unknown	Unknown	D&M Boring ER-1
8	BCM-24	Pier 33	Railroad ballasts	Unknown	Unknown	Unknown	Railroad ballasts contain low levels of petroleum hydrocarbons (location cannot be determined with available information)
9	BCM-15	Seawall Lot 316		Petroleum products	Nickel	Unknown	D&M Boring ER-2
10	BCM-24 P-20 P-10-1C P-10-2H	Pier 29/31	Railroad ballasts, abandoned wastes	Unknown	Unknown	Unknown	Railroad ballasts contain low levels of petroleum hydrocarbons (location cannot be determined with available information); abandoned paint previously identified at site; UST previously noted at site
11	BCM-79	Beltway Railway Fuel Tanks Seawall Lot 318	USTs	Petroleum products, PNAs, lead	Petroleum products	Unknown	USTs consist of two 60,000 gallon concrete tanks connected by piping with fill pipes running to the wharf from each UST; the UST at Lombard Street has reportedly been emptied and filled with sand; the condition of the UST at Battery Street is unknown; D&M Boring ER-3
12	BCM-24 P-10-2F P-10-2G	Pier 23	Railroad ballasts	Unknown	Unknown	Unknown	Railroad ballasts contain low levels of petroleum hydrocarbons (location cannot be determined with available information); UST previously noted at site
13	BCM-15	Seawall Lot 321		Lead	Unknown	Unknown	D&M Boring ER-4
14	P-20 BCM-24	Pier 15	Railroad ballasts, abandoned wastes	Unknown	Unknown	Unknown	Railroad ballasts contain low levels of petroleum hydrocarbons (location cannot be determined with available information); abandoned oil previously identified at site
15	P-20 BCM-24	Pier 9	Railroad ballasts, abandoned wastes	Unknown	Unknown	Unknown	Railroad ballasts contain low levels of petroleum hydrocarbons (location cannot be determined with available information); abandoned paint, oil, batteries, thinner, solvent, roofing mastic, spray cans, all purpose cement, empty containers identified at site
16	BCM-15	Seawall Lot 324		SOCs, lead	SOCs	Unknown	D&M Borings ER-5 and ER-6
17	BCM-18 BCM-10 BCM-16	Seawall Lot 323	Previous land uses	Petroleum products, PNAs, lead	Unknown	Unknown	Previous land uses include a copper shop, carriage painting shop, Chinese laundry

TABLE H-1: SUMMARY OF SITES IDENTIFIED WITHIN WATERFRONT AREA (San Francisco Waterfront Land Use Plan EIR) (continued)

Site No.	Review No.	Site Name	Source	Soil Contamination	Groundwater Contamination	Off Site Contamination	Comments
Northeast Waterfront Subarea (continued)							
18	BCM-24	1101 Embarcadero	Railroad ballasts	Unknown	Unknown	Unknown	Railroad ballasts contain low levels of petroleum hydrocarbons (location cannot be determined with available information).

Site No.	Review No.	Site Name	Source	Soil Contamination	Groundwater Contamination	Off Site Contamination	Comments
Ferry Building Subarea							
19	BCM-15 P-10-3A	Seawall Lot 351		Petroleum products, SOCs, VOCs, lead	Metals	Unknown	D&M Borings ER-7, ER- 8, ER-9 and ER-10; UST previously noted at site
20	P-20 P-30 P-10-3H	Pier 5	UST, abandoned wastes	Unknown	Unknown	Unknown	UST was located in vault; soil and groundwater beneath vault were not sampled; excavated soil was placed back in vault; piping was left in place; abandoned thinner previously identified at site
21	P-20 P-10-3F P-10-3G	Pier 3	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned batteries previously identified at site
22	P-20 P-10-3B P-29	Ferry Building, Agriculture Building	UST, abandoned wastes	Petroleum products	Unknown	Unknown	UST excavation was backfilled with excavated soil; abandoned oil previously identified at site
23	BCM-15 BCM-56 BCM-62 BCM-63	Muni Metro Turn Around		Petroleum products, SOCs, VOCs, metals, asbestos	Petroleum products, PNAs, metals	Unknown	D&M Borings ER-11, ER-12 and ER-13
24	BCM-17 P-35 P-10-4A P-10-4B P-10-4C	260 Embarcadero, 240 Embarcadero, 200 Embarcadero Seawall Lots 346 and 347.5	USTs	Petroleum products, PNAs, metals	Petroleum products, lead	Unknown	In 1963 a leaking 550 gallon gasoline UST was closed in place with 100 gallons of gasoline, this UST was subsequently removed in 1987; a 1,000 gallon unleaded gasoline UST was removed in 1987; Excavated soil was placed back in excavation; piping was left in place; hand written note on report indicates that soil was cleaned in 1993
25	BCM-72	Folsom Street		Petroleum products, PNAs, VOCs, dibenzofuran, metals	Unknown	Unknown	Site is adjacent to Project Area; black viscous liquid observed on groundwater in one monitoring well
26	BCM-15	Seawall Lot 327		Petroleum products, VOCs, lead	Unknown	Unknown	D&M Boring ER-14

TABLE H-1: SUMMARY OF SITES IDENTIFIED WITHIN WATERFRONT AREA (San Francisco Waterfront Land Use Plan EIR) (continued)

Site No.	Review No.	Site Name	Source	Soil Contamination	Groundwater Contamination	Off Site Contamination	Comments
South Beach/China Basin Subarea							
27	BCM-15 P-10-4F P-10-4G P-10-4S	Seawall Lot 328		Petroleum products, lead	Metals	Unknown	USTs previously noted at site; D&M Borings ER-15 and ER-16
28	P-23	Pier 24	Caltrans maintenance operations for the Bay Bridge	Lead	Unknown	Unknown	Lead in soil at pier exceeded hazardous waste criteria. Lead from the roof of shed was removed in December, 1992 prior to demolition of shed
29	P-23 P-20 P-10-4U	Pier 26	Caltrans maintenance operations for the Bay Bridge, abandoned wastes	Lead	Unknown	Unknown	Lead in soil at pier exceeded hazardous waste criteria; removal of lead from shed roofs was completed in 1995; abandoned oil, batteries, potassium bicarbonate previously identified at site
30	P-23 P-20	Pier 28	Caltrans maintenance operations for the Bay Bridge, abandoned wastes	Lead	Unknown	Unknown	Lead in soil at pier exceeded hazardous waste criteria; removal of lead from shed roofs was completed in 1995; abandoned paint, oil, batteries, drums previously identified at site
31	P-20	Pier 30	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned oil previously identified at site
32	P-20	Pier 32	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned food waste previously identified at site
33	BCM-15	Seawall Lots 329 and 330		Petroleum products, SOCs, VOCs, lead	Petroleum products, metals	Unknown	D&M Boring ER-17
34	BCM-15 P-10-6A	Seawall Lot 331		SOCs, lead	Unknown	Unknown	D&M Boring ER-19
35	BCM-15 P-27 P-16-6D P-10-6L	Seawall Lot 332	USTs	Petroleum products, SOCs, lead	Petroleum products, PNAs	Unknown	UST excavations backfilled with excavated soil; D&M Boring ER-20; a UST was previously noted at 646 First Street
36	BCM-15 P-10-6M	Pier 36		SOCs, lead	Metals	Unknown	Gasoline previously stored at site, unspecified method; D&M Boring ER-18
37	P-10-6M P-10-6N	Pier 38	USTs	Unknown	Unknown	Unknown	Data regarding removal of two USTs are unavailable; an additional UST was noted at site

Site No.	Review No.	Site Name	Source	Soil Contamination	Groundwater Contamination	Off Site Contamination	Comments
South Beach/China Basin Subarea (continued)							
38	P-32 P-10-6M P-10-6O	Pier 40	USTs	Unknown	Petroleum products	Unknown	No soil samples were collected; no holes were observed in USTs; excavated soil was placed back in excavation; piping was left in place
39	P-1 P-31 P-34 P-36 P-10-6E P-10-6G P-10-6F P-10-6J	Seawall Lot 333 1, 49, 59, and 62 Townsend Street	USTs, coal gasification plant, fill materials	Petroleum products, PNAs, sulfides, methane, lead	Metals, VOCs	Unknown	Excavated soil was placed back in UST excavations; piping was left in place; handwritten note on report for 1 Townsend Street indicates that soil was cleaned up by the DPW during the Embarcadero project; distinct layers of coal gasification waste were noted during previous investigations; soil containing greater than 1,000 mg/kg of petroleum products was removed from a portion of the site in 1989, other areas remain unremediated; a UST was previously noted at 62 Townsend Street
40	BCM-77 BCM-29 P-10-7R P-10-7A P-10-7B P-10-7C	Berry Street Property, King Street	Building materials, fill materials, coal gasification plant (on-site)	Petroleum products, SOCs, VOCs, metals	Petroleum products, SOCs, VOCs	Unknown	Asbestos and lead is present in the building materials at several buildings; UST previously noted at site; D&M Borings ER-21 and ER-23
41	P-20	Dodds Fumigation	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned paint, batteries, grease previously noted at site
42	BCM-54	Seawall Lot 334 South Beach Park		Petroleum products, PNAs, metals	Unknown	Unknown	In 1948 and 1955 above ground tanks were noted in portion of site that is west of The Embarcadero; D&M Boring ER-22
43	P-28 P-20 P-10-6P P-10-6Q	Pier 46, 46B	USTs, abandoned wastes	Petroleum products	Petroleum products	Unknown	UST excavations were backfilled with excavated soil; abandoned paint, oil, waste oil, paint thinner previously identified at site; three USTs were reportedly abandoned in place at Pier 46B

TABLE H-1: SUMMARY OF SITES IDENTIFIED WITHIN WATERFRONT AREA (San Francisco Waterfront Land Use Plan EIR) (continued)

Site No.	Review No.	Site Name	Source	Soil Contamination	Groundwater Contamination	Off Site Contamination	Comments
South Beach/China Basin Subarea (continued)							
44	P-17	220 China Basin Street H & H Ship Services	UST	Petroleum products	Petroleum products	Unknown	Facility consists of a drum storage area, Treatment/Transfer Area (TTA) utilizing twelve above ground tanks to treat and store hazardous wastes, and a tank cleaning facility where tanks which previously held hazardous materials are emptied, cleaned, and decontaminated; facility also recycles waste oil/water; closure of the TTA is partially complete; closure plan has been approved by DTSC; H&H removed all above ground tanks, soil and groundwater samples were taken; H&H is developing soil and groundwater remediation plan; one above ground tank removed in 1990 without the approval of the regulatory agencies; one UST was removed in 1987 and another UST remains in place; excavated soil was placed back in UST excavation; soil and groundwater quality due to site operations other than the UST have not been evaluated
45	P-20	Pier 48	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned paint, batteries, bleach, detergent, brake fluid previously identified at site
46	P-4	145 China Basin	UST	Petroleum products	Unknown	Unknown	Excavated soil was placed back in UST excavation; piping was left in place
47	P-4	300 China Basin	UST	Unlikely	Unlikely	Unlikely	Excavated soil was placed back in UST excavation
48	P-20	Pier 50, 50A	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned drums, oil filters previously identified at site
49	P-19 P-20	Pier 54 Crowley Marine Services Facility	Previous land uses, abandoned wastes	Unknown	Unknown	Unknown	Lead, PNAs, organotin compounds identified in sediments; local historical source of organotin compounds and PNAs is indicated; site inspection in 1994 indicated asphalt staining; asbestos containing materials identified in pipeline insulation and mastic; two USTs under piers were reportedly used for sewage; storm drain outfalls located at or near site are potential sources of contamination; abandoned paint, oil, oil filter, unknown wastes, tank previously identified at site

Site No.	Review No.	Site Name	Source	Soil Contamination	Groundwater Contamination	Off Site Contamination	Comments
South Beach/China Basin Subarea (continued)							
50	P-20	Pier 56	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned oil previously identified at site
51	P-20	Pier 64	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned paint, oil, batteries, asbestos, water treatment chemicals, acrylic grout additive, previously identified at site
52	LOP-2	300 Sixteenth Street	USTs	Petroleum products	Petroleum products	Unknown	Site is adjacent to study area; only low level impacts were identified; no further action required by the DPH; monitoring wells to be abandoned.
53	P-3b	333 Illinois Street Seawall Lot 340	UST	Petroleum products	Petroleum products	Unknown	Floating product was observed on groundwater; excavated soil was placed back in excavation
54	P-8	499 Illinois Street Esprit De Corp	USTs	Petroleum products, PNAs	Petroleum products	Unknown	Review of historic 1944 and 1965 aerial photos for Phase I site assessment showed previous presence of 21 above ground storage tanks and stained soil in the southeast portion of the site; free product identified in four soil borings

TABLE H-1: SUMMARY OF SITES IDENTIFIED WITHIN WATERFRONT AREA (San Francisco Waterfront Land Use Plan EIR) (continued)

Site No.	Review No.	Site Name	Source	Soil Contamination	Groundwater Contamination	Off Site Contamination	Comments
Southern Waterfront Subarea							
55	P-14 P-7 P-20	Pier 70 Landfill Mariposa Facilities 855 China Basin Seawall Lot 349	Landfill materials, illegally stored waste in Building 6, USTs, fill materials, abandoned wastes	Petroleum products, PNAs, VOCs, PCBs, asbestos, metals	Petroleum products, metals	Unknown	The landfill was created through deposition of approximately 17,000 cubic yards of demolition debris from on-site structures and excavated earth materials into four slips and capped with asphaltic concrete, some industrial waste may also have been incorporated into fill; the majority of the landfill is situated in Bay water; three above ground storage tanks noted to south of landfill site; in 1983 drums of solid waste, asbestos, solvent, and caustic were illegally stored in Building 6 and many reportedly leaked, soil and building cleanup was performed under DHS oversight; a portion of this site adjacent to Building 6 was planned as a staging area to stockpile soil excavated during the installation of the Clean Water stormwater collection system; in 1991 the Port reported that there had been seven USTs at this site with soil contamination by petroleum hydrocarbons noted at five of the UST locations; abandoned paint, oil, batteries, paint thinner, lagging adhesive, food grease, weed killer, acid, leaking drum previously identified at site
56	LOP-1 P-20	Potrero Power Plant 1201 Illinois Street	USTs, manufactured gas plant, above ground tanks, abandoned wastes	Petroleum products, PNAs, PCBs	Petroleum products	Likely	This site is a former manufactured gas plant site used from 1872-1930; operations conducted include coal gasification, carbureted water gasification, oil gasification; free product has been observed on the groundwater; eight large above ground storage tanks were previously removed; abandoned oil, thinner previously identified at site; PG&E no longer owns a portion of the site
57	P-11	Union Pacific Army Street Site	Fill, spills of petroleum products, possibly sewer outfall to north of property boundary, abandoned wastes	Petroleum products, PNAs, metals	Petroleum products, PNAs, VOCs	PNAs, metals	Off-shore sediments contain PNAs and metals, suspected source is creosote and/or creosote treated wood produced from weathering and demolition of off-shore pier; on-site sediments contain lead; creosote coated wood, wood fragments, and tar based roof shingles and asphalt are buried in fill soils; four above ground tanks noted in 1935 aerial photo; slag fragments were observed at depths to 25 feet in two soil borings; off-site source of petroleum products in groundwater is indicated; Phase I of remediation has been completed; additional phases are planned
58	P-20 P-33	Pier 80	USTs, abandoned wastes	Petroleum products	Petroleum products	Unknown	Excavated soil was placed back in UST excavation; a thin film of an oily substance was observed on the groundwater; abandoned oil, batteries, paint thinner

Site No.	Review No.	Site Name	Source	Soil Contamination	Groundwater Contamination	Off Site Contamination	Comments
Southern Waterfront Subarea (continued)							
59	P-6 P-20	1301 Army Street Granex Facility Islais Creek Overflow Structures	Above ground tanks, USTs, copra processing, chemical storage, fill materials, abandoned wastes	Oil and grease, petroleum products, metals, VOCs, PCBs, asbestos, combustible gasses	Petroleum products	Unknown	This site was previously a copra processing facility, the source of oil and grease is suspected to be crude coconut oil; a chemical container in the hazardous materials storage shed previously leaked onto the gravel and dirt floor; a Texaco above ground tank farm was previously located in western portion of the site with an oil loading wharf to the south; a site inspection in 1989 identified a pile of slag associated with former activities of the Federated Metals Corporation to the west, Federated Metals was the subject of an extensive lead clean up; dumping reported on site; sumps containing hazardous wastes noted on-site; ACM was identified in building materials; residential garbage, waste oils, and used auto parts noted to north of site in 1992; the San Francisco Department of Public Works planned to use the eastern portion of the site as a staging area for the temporary storage of soil for the Islais Creek Support Job in 1992
60	BCM-78	Federated-Fry Metals	Site operations	Petroleum products, PNAs, VOCs, PCBs, metals, asbestos	SOCs	Unknown	Soil contamination primarily restricted to shallow soil
61	P-20	Pier 88	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned paint previously identified at site
62	P-9 P-38 P-20	Pier 90 Seawall Lot 344C Bay Area Tank and Marine	Storm drains potentially soil treatment, abandoned wastes	BTEX	Unknown	Unknown	Only very low levels of BTEX were identified in soil during site investigation; likely source of BTEX reported by consultant is surficial spills from vehicles or asphalt paving; oil drum and above ground diesel tank also noted by consultant; the soil treatment facility treats nonhazardous soil with aeration or bioremediation; cleaned soil is disposed of at a Class III disposal site; soil being treated is placed on and covered with plastic; upon completion of site activities, unpaved areas around site will be sampled and analyzed, the site will be inspected by the Port Commission or the DPH; abandoned paint, oil, batteries, transistors, oil filters, tire, empty drums previously identified at site

TABLE H-1: SUMMARY OF SITES IDENTIFIED WITHIN WATERFRONT AREA (San Francisco Waterfront Land Use Plan EIR) (continued)

Site No.	Review No.	Site Name	Source	Soil Contamination	Groundwater Contamination	Off Site Contamination	Comments
Southern Waterfront Subarea (continued)							
63	P-16 P-20 P-39 P-22 P-18	Pier 94 Landfill Seawall Lot 344 Pier 94, west Concrete and Asphalt Recycling Facility Department of Public Works Soil Remediation Site	Landfill materials (construction debris), abandoned wastes, potentially recycled materials, potentially soil treatment	Petroleum products, SOCs, VOCs, pesticides, PCBs, metals	Petroleum products, SOCs, VOCs, pesticides, phenol, metals, TDS, TOC, TKN	Unknown	There is no liner installed at this landfill; Port will close 60 acre landfill site; a debris dike was constructed in 1961 to isolate the 60 acre landfill area; 2.5 million cubic yards of dredged bay mud from the Army Street terminal (Pier 80) were hydraulically placed in landfill in 1964; site activities ceased in 1977; phenol is also identified in surface water samples collected as part of the closure requirements; abandoned oil, batteries previously identified at site; materials handled by recycling facility may not be classified as hazardous wastes; PNAs, oil, lead and chromium are considered potentially leachable from the asphalt grindings; potentially contaminated surface water run off will need to be contained and potentially monitored; proposed facility to treat soil from City projects that will generate nonhazardous soil containing petroleum hydrocarbons; treatment to include bioremediation; stockpiles of earthen materials and construction materials previously noted on site; soil investigation and groundwater monitoring planned before construction of facility; air monitoring would be conducted during operation to evaluate potential airborne releases of chemicals
64	P-20	Pier 96	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned paint, batteries previously identified at site
65	P-15	Pier 98 Landfill	Landfill materials (construction debris)	SOCs, ethylbenzene, xylenes, metals	Petroleum products, SOCs, benzene, metals, TDS, TOC, TKN	Unknown	There is no leachate collection system or liner in place at this landfill; a protective barrier has been placed along the submerged perimeter of the landfill which has visibly reduced discharges to the bay (Subchapter 15 compliance report for Pier 98, November 1989); surface waters of the bay may be in hydraulic connection with the fill materials
66	BCM-81 BCM-82 BPR-1 BPR-2	East India Basin Business Park	Fill Materials	Petroleum products, PNAs, VOCs, oil & grease, cyanide, metals, possibly methane	Petroleum products, SOCs	Unknown	Minor dumping of oil at site was indicated by visual observations. SOCs may be associated with asphalt in samples. 620 cubic yard stockpile noted at site. A sample from the slag pile contained low levels of PCBs.

Site No.	Review No.	Site Name	Source	Soil Contamination	Groundwater Contamination	Off Site Contamination	Comments
Sites Not Mapped							
	P-20	Mission Creek	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned oil, batteries previously identified at site
	P-20	China Basin	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned paint, oil, batteries, oil filters previously identified at site
	P-20	Illinois Street	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned paint and household grease previously identified at site
	P-20	Embarcadero	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned oil, batteries, battery acid sweep previously identified at site
	P-20	Marin Street	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned oil, oxygen cylinders, batteries previously identified at site
	P-20	23rd Street	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned asphalt previously identified at site
	P-20	Islais Creek	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned paint, oil, drums previously identified at site
	P-20	Mission Rock	Abandoned wastes	Unknown	Unknown	Unknown	Abandoned paint, fuel tank previously identified at site

Abbreviations:

ACM = Asbestos containing materials
BTEX = Benzene, toluene, ethylbenzene and xylenes
D&M = Dames & Moore
DHS = California Department of Health Services (Currently the Department of Toxic Substances Control)
DPH = San Francisco Department of Public Health
DPW = San Francisco Department of Public Works
PCBs = Polychlorinated Biphenyls
PNAs = Polynuclear Aromatic Hydrocarbons
SOCs = Semivolatile Organic Compounds
TDS = Total dissolved solids
TKN = Total Keldhal Nitrogen
TOC = Total Organic Carbon
UST = Underground storage tank (s)
VOC = Volatile Organic Compounds

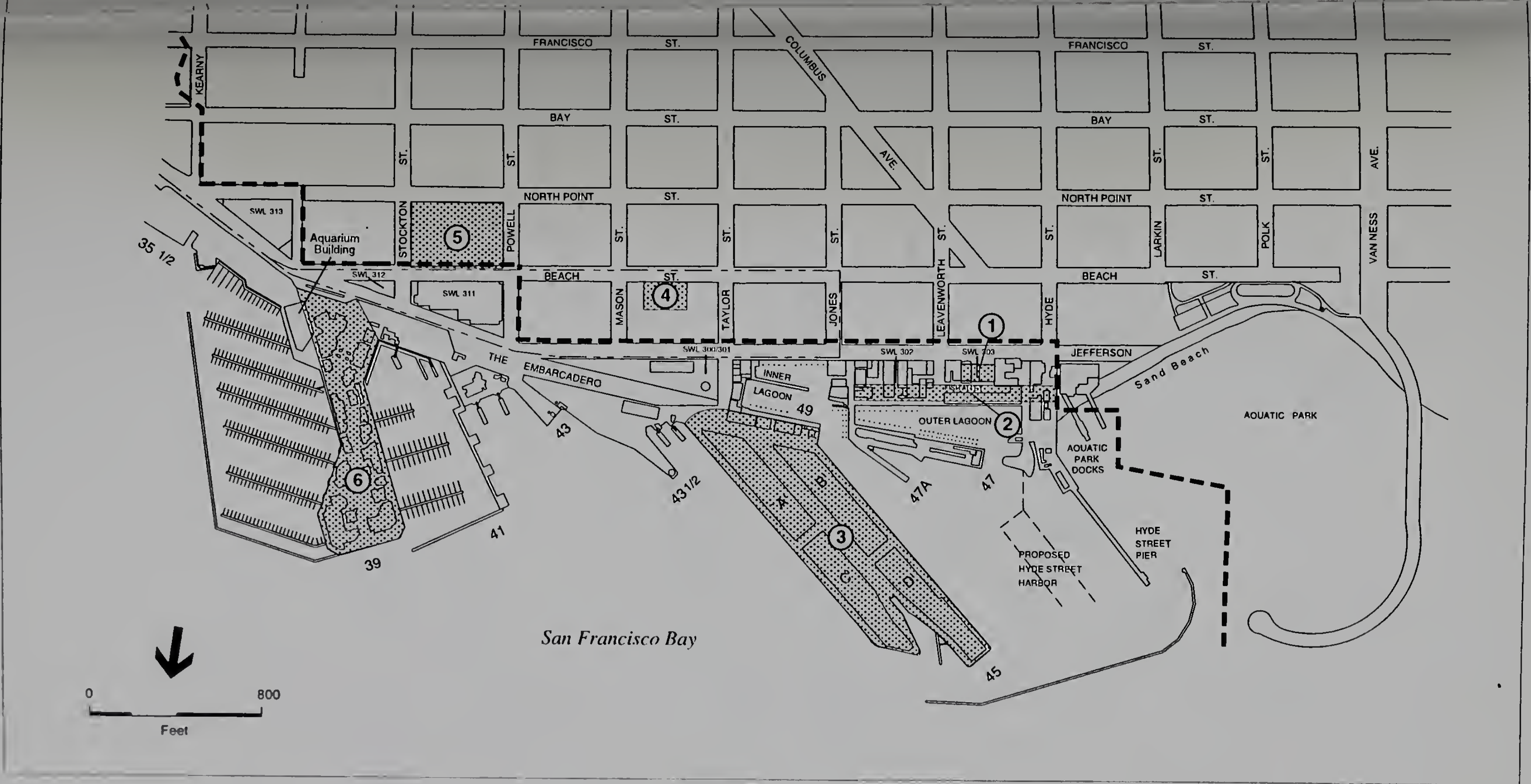
TABLE H-1: SUMMARY OF SITES IDENTIFIED WITHIN WATERFRONT AREA (San Francisco Waterfront Land Use Plan EIR) (continued)

Notes:

Ranking of unknown under soil contamination, groundwater contamination, and off-site contamination indicate that sampling has not been conducted to evaluate the potential for contamination.
Ranking of unlikely under soil contamination or groundwater contamination indicates that sampling has been conducted but contamination was not identified.
Ranking of unlikely under off-site contamination indicates that the potential for off-site contamination is unlikely, although sampling may have not been performed to evaluate this.

Review number refers to documents listed in the bibliography of reports reviewed. The bibliography is maintained in the administrative file.

SOURCE: Orion Environmental Associates, based on file review information obtained from the Port of San Francisco, San Francisco Bureau of Construction Management and the San Francisco Department of Public Health, Local Oversight Program.



San Francisco Municipal Railway (MUNI) F-Line: An extension of the F-Line from Market Street north to Fisherman's Wharf, featuring the City's historic streetcar collection

Waterfront Plan Project Area Boundary

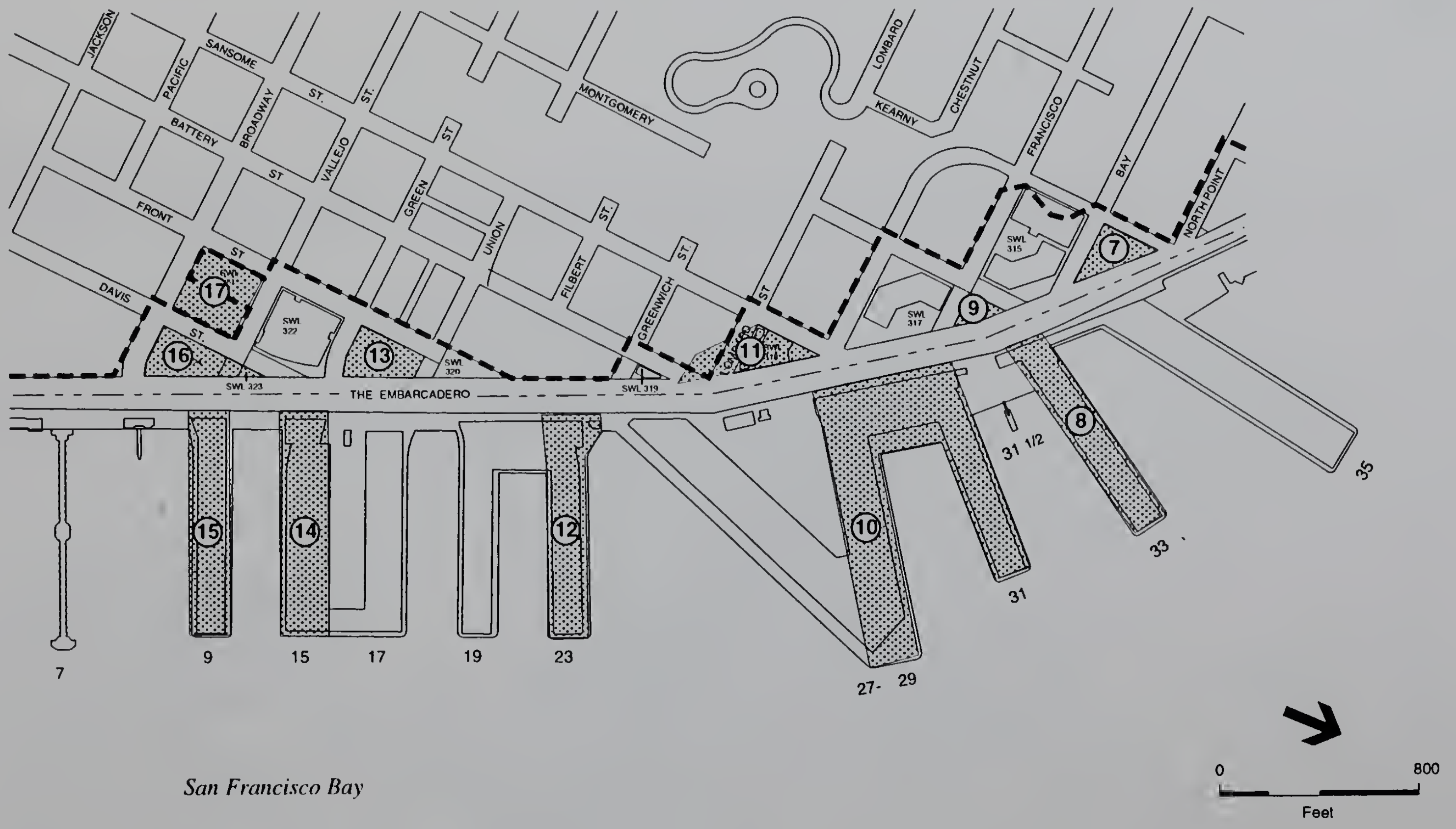
SWL Seawall Lot

NOTE: For site number key refer to Table H-1

San Francisco Waterfront Plan EIR ■

Figure H-1

Hazardous Materials Inventory
Fisherman's Wharf Subarea



NOTE: The location of Site 18. 1101 Embarcadero, could not be accurately identified from the information available in the file.

— - - — - San Francisco Municipal Railway (MUNI) F-Line: An extension of the F-Line from Market Street north to Fisherman's Wharf, featuring the City's historic streetcar collection.

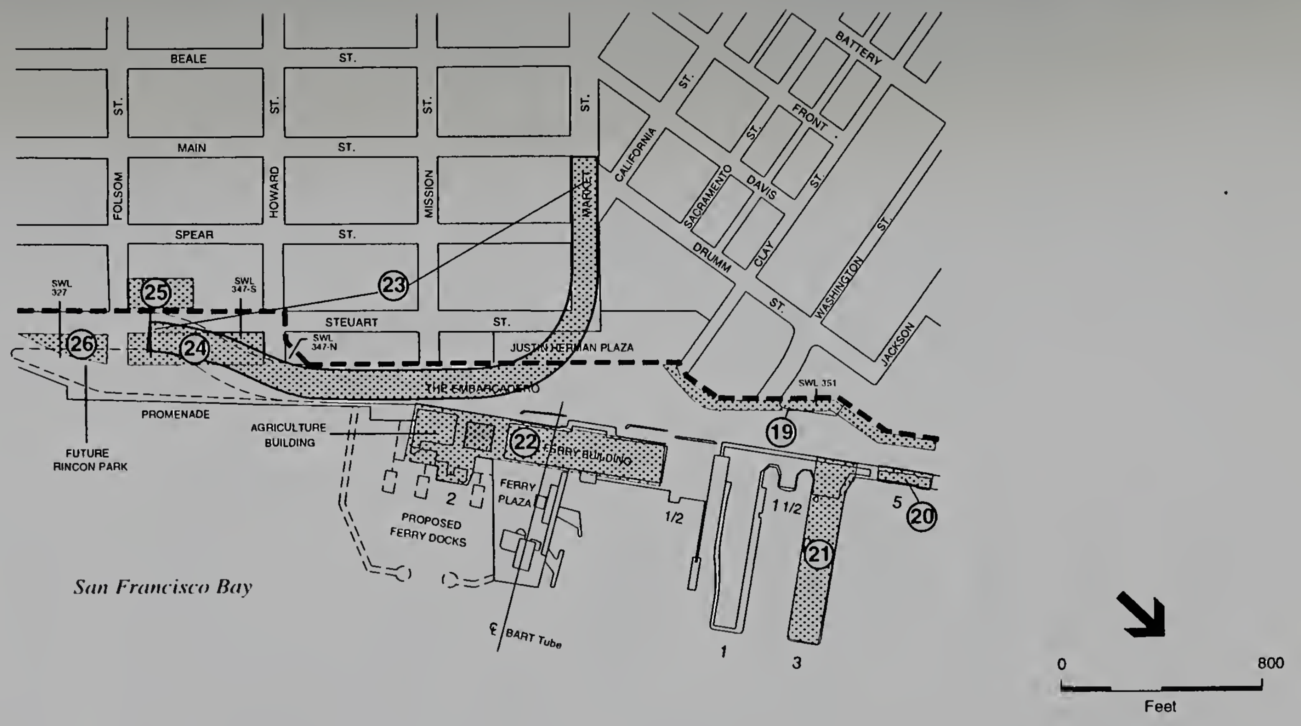
▬ ▬ ▬ ▬ Waterfront Land Use Plan Area Boundary

SWL Seawall Lot

NOTE: For site number key refer to Table H-1

Figure H-2

Hazardous Materials Inventory



- - - - - Waterfront Land Use Plan Area Boundary

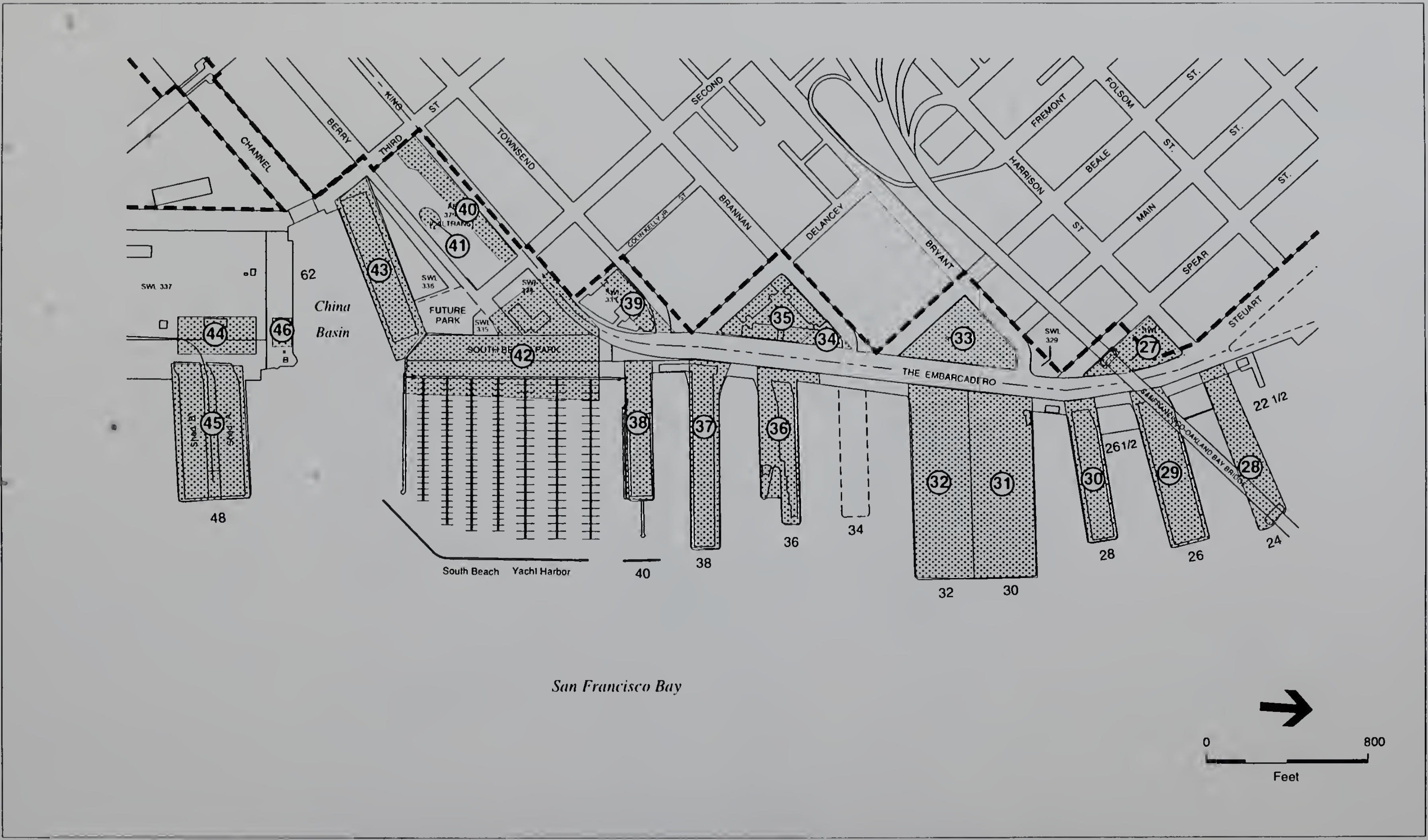
SWL Seawall Lot

NOTE For site number key refer to Table H-1

San Francisco Waterfront Land Use Plan EIR ■

Figure H-3

Hazardous Materials Inventory
Ferry Building Subarea



Waterfront Land Use Plan Area Boundary

Indicates condemned piers

(North of China Basin) San Francisco Municipal Railway (MUNI) Metro Extension: A surface extension of the MUNI Metro subway light rail from Market Street south to I-280 and along King Street to Sixth Street and beyond.

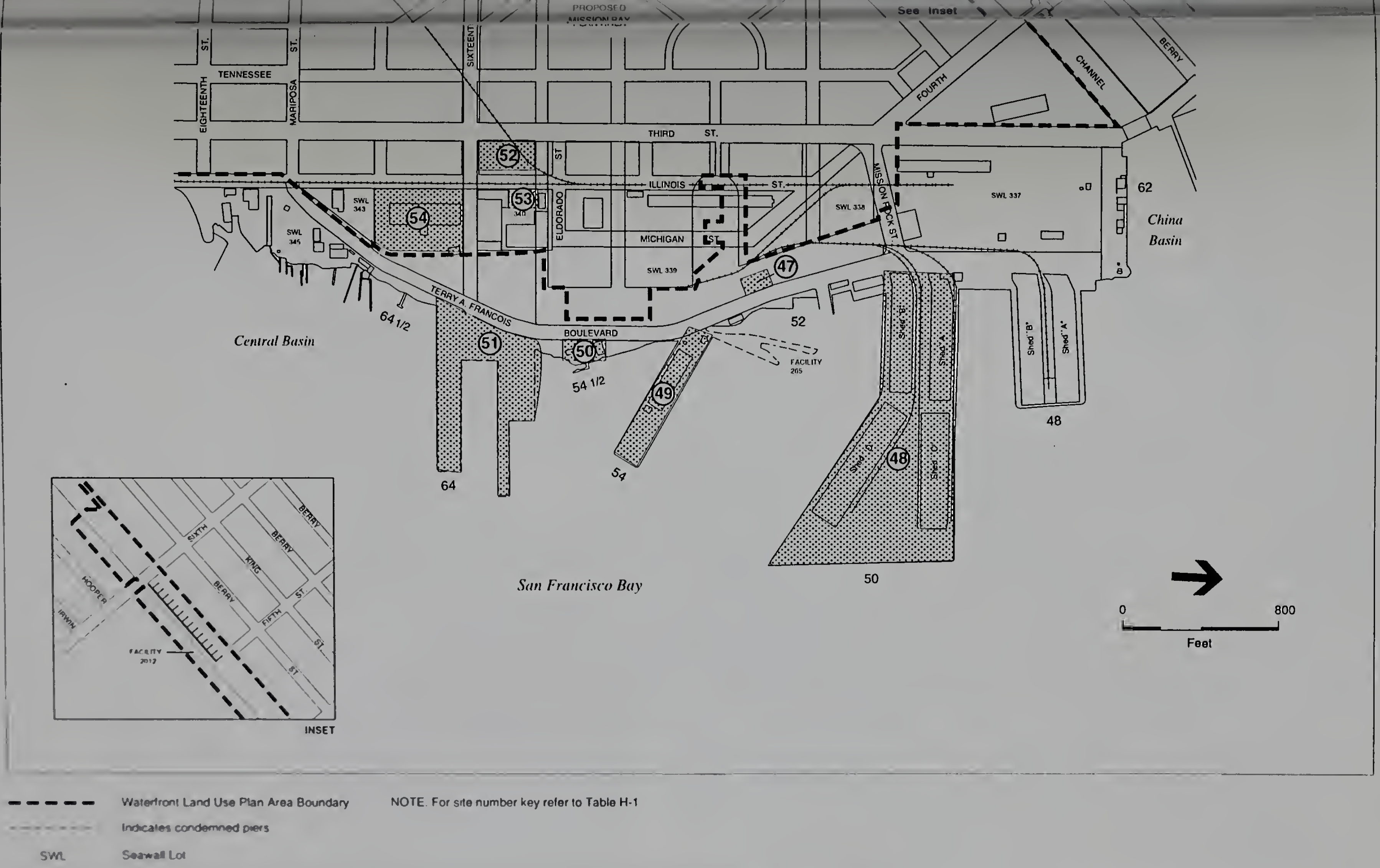
SWL Seawall Lot

NOTE: For site number key refer to Table H-1

San Francisco Waterfront Land Use Plan EIR ■

Figure H-4

Hazardous Materials Inventory



San Francisco Waterfront Land Use Plan EIR ■

Figure H-5

Hazardous Materials Inventory
South Beach/China Basin Subarea
(Southern Portion)

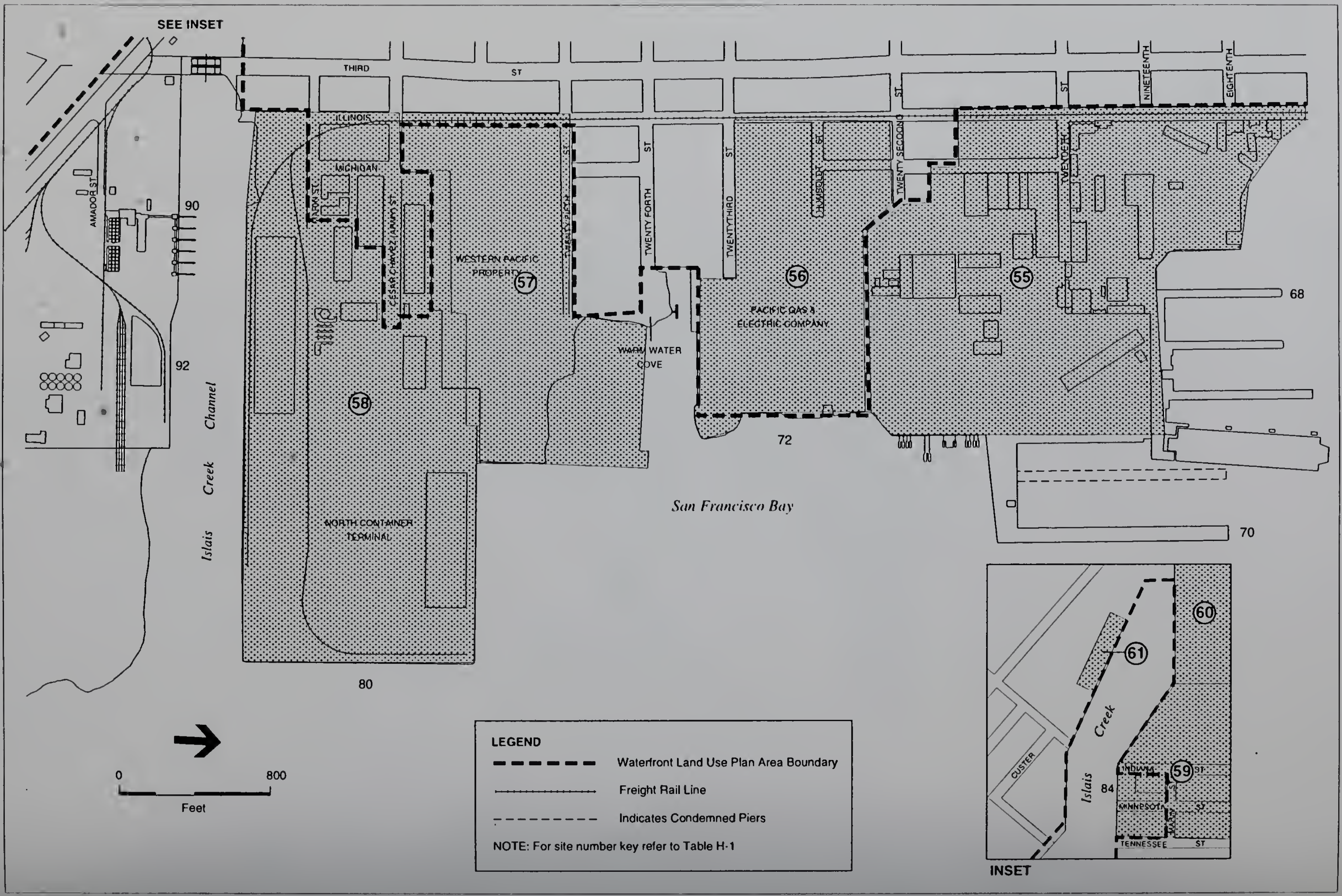
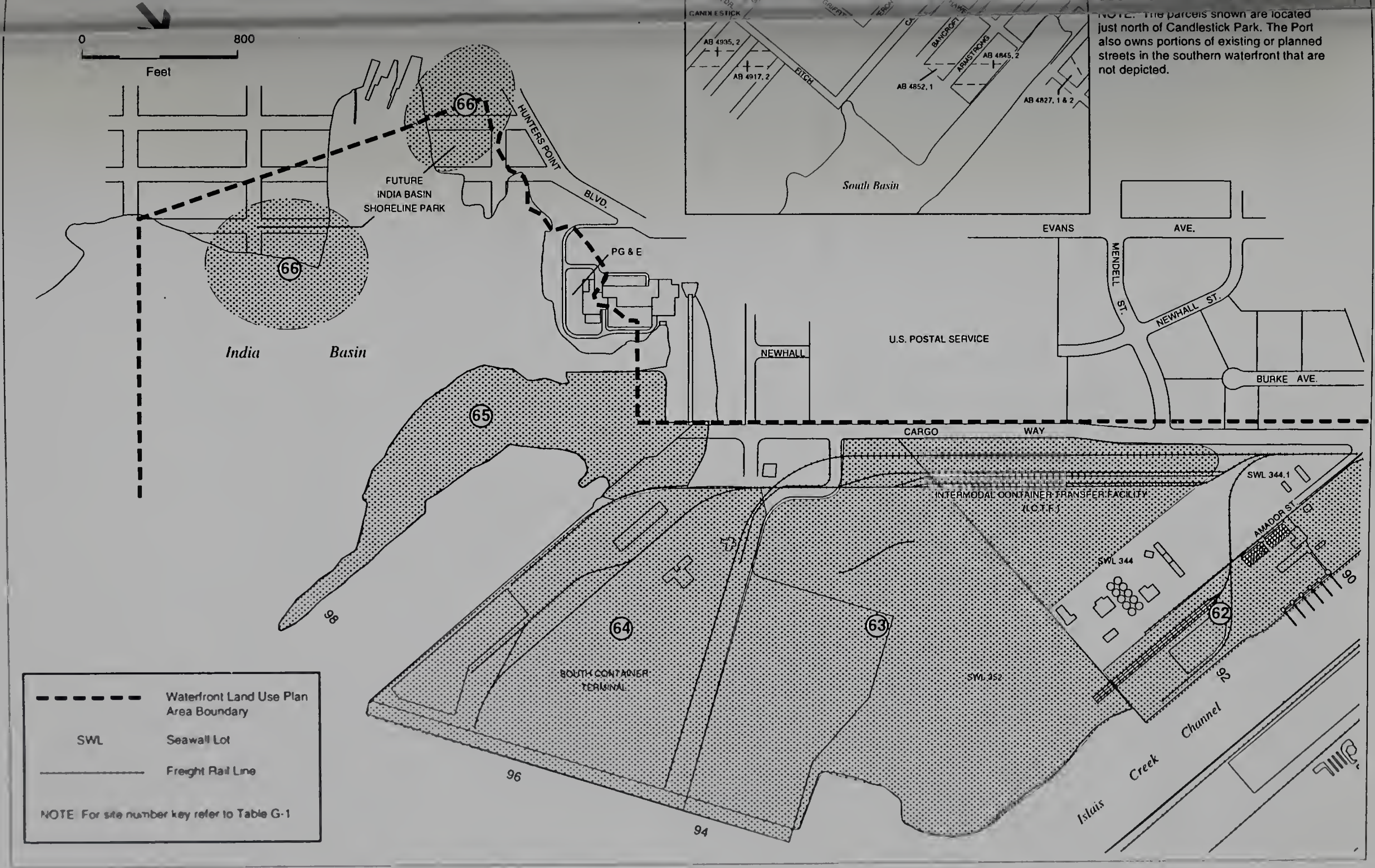


Figure H-6
Hazardous Materials Inventory



NOTE: The parcels shown are located just north of Candlestick Park. The Port also owns portions of existing or planned streets in the southern waterfront that are not depicted.

San Francisco Waterfront Land Use Plan EIR ■

Figure H-7

Hazardous Materials Inventory
Southern Waterfront Subarea
(Southern Portion)

SIGNIFICANT AND POTENTIALLY SIGNIFICANT RESOURCES IN THE PROJECT AREA

Plan Subarea and Resource Name	**Existing Ratings and Designations***	**Significant or Potentially Significant****
Ferry Building		
Union Ferry Terminal (Ferry Building)	NR/CA/SFLM90	Significant
Ferry Station P.O. (Agriculture Building)	NR/CA	Significant
Pier 1-5 Pierhead and Bulkhead Buildings	NRAE/DCP4/HerA	Significant
Pier 1-3 Sheds	HerA	Potentially Significant
Northeast Waterfront		
Pier 9 Shed and Pierhead	DCP4/HerB+	Potentially Significant
Pier 15 Shed and Pierhead	HerB+	Potentially Significant
Pier 19 Shed and Pierhead	DCP4/HerB+	Potentially Significant
Pier 23 Shed and Pierhead	DCP4/HerB+	Potentially Significant
Beltline RR Roundhouse	NR/CA/SFLM114 DCP1/HerC+	Significant
Beltline RR "Annex"	DCP1/HerC+	Potentially Significant
Pier 29-31 Pierheads, Bulkheads, and Sheds	DCP4/HerA	Potentially Significant
Pier 33-35 Pierheads, Bulkheads, and Sheds	DCP4/HerA-B+	Potentially Significant
Northeast Waterfront Historic District	NRAE/SFHD	Significant
Fisherman's Wharf		
Ferry Arch at Pier 43	DCP3	Potentially Significant
Pier 45 Pierheads and Sheds	DCP4	Potentially Significant
Hyde Street Pier	NR/CA/Maritime State Hist. Mnmt.	Significant
Various Historic Ships, including, but not necessarily limited to the SS *Jeremiah O'Brien*, *Star of Alaska*, *Balclutha*, USS *Pampanito*, *Alma*, *Eureka*, *Hercules*, *Wapama*, and *Lewis Ark* (various permanent and temporary berthing locations)	NR	Significant

(Continued)

Plan Subarea and Resource Name	**Existing Ratings and Designations***	**Significant or Potentially Significant****
China Basin		
Fireboat House/Pier 22.5	NREL/CA	Significant
Pier 26	DCP2/HerA	Potentially Significant
Pier 28 Shed and Pierhead	DCP2/HerB	Potentially Significant
Pier 38 Pierhead Building	NREL/CA/DCP2 /HerB+	Significant
Pier 38 Shed	HerB+	Potentially Significant
Pier 48 Sheds and Pierheads	NRPE/DCP1	Potentially Significant
Third Street Bridge	NREL/CA/SFLM194	Significant
Fourth Street Bridge	NREL/CA	Significant
Southern Waterfront		
Main Office Building (#101)	NRPE (also in NRPE District)	Potentially Significant
Powerhouse No. 1 (#102)	NRPE (also in NRPE District)	Potentially Significant
Steam Powerhouse No. 2 (#103)	in NRPE District	Potentially Significant
Office Building (#104)	NRPE (also in NRPE District)	Potentially Significant
San Francisco Yard Historic District (Union Ironworks)	NRPE District	Potentially Significant

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NR	Listed in the National Register of Historic Places ("National Register")
NREL	Officially Determined Eligible for the National Register
NRAE	Appears Eligible for the National Register per the State Historic Preservation Officer
NRPE	Appears Eligible for the National Register per independent analysis
CA	Listed in the California Register of Historic Resources
SFLM#	Designated San Francisco Landmark (w/Number)
SFHD	Designated San Francisco Historic District
DCP#	Listed in the Planning Department's 1976 Architectural Survey (w/rating)
HerA	Listed by the Foundation for San Francisco's Architectural Heritage (w/rating)

** "Significant" resources include local Landmarks and locally designated historic districts, resources listed in the National Register of Historic Places or officially determined eligible for listing in the Register, resources included in the California Register of Historic Resources, and resources determined by the State Historic Preservation Officer to appear eligible for listing in the National Register. "Potentially Significant" resources include those with no formal designation, including resources rated in the 1976 DCP Survey, resources rated by SF Heritage, and associated pier sheds considered by reviewers to be integral to these rated resources.

STRUCTURES OF NOTE*

Plan Subarea and Building Name	Existing Rating (if any)	Plan Subarea and Building Name	Existing Rating (if any)
Northeast Waterfront		*Fisherman's Wharf*	
Pier 7	HerD	Eagle Cafe	NREL/CA (1978)
Pier 17	HerD	Dolphin & South End Rowing Clubs	
Pier 24	DCP4	Fisherman's Wharf Buildings: United Shell Fish Co.,Crab Boat Owners, Fishhandlers, Golden Gate Ferry, and FE Booth ("Grotto")	
China Basin		Blue Shield Offices (2 North Point Street)	DCP4
Pier 26 Annex			
Pier 28 Annex		*Southern Waterfront*	
Pier 36	HerC	Firehouse No. 25	
Pier 40	HerC&D		
Pier 46B	HerC		

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* Identified structures of interest that are not considered significant or potentially significant by reviewers based on existing information, although they may have been rated in past surveys

APPENDIX J: GROWTH-INDUCING IMPACTS

RCHT
HAUSRATH
ASSOCIATES

MEMORANDUM

DATE: June 5, 1995 (revised May 7, 1996)
TO: Arlyn Purcell, ESA
Paul Deutsch, DCP
FROM: Sally Nielsen
SUBJECT: Notes on Growth Inducement and Land Use Impacts for Nearby Areas: Waterfront Plan EIR

This memorandum outlines growth inducement issues illustrated by the Waterfront Plan EIR Aternatives and land use impacts of the Alternatives for parts of the city outside the Waterfront Pan Project Area. This information is provided to assist the Office of Environmental Review (OER) to prepare the land use impacts and growth inducement sections of the Waterfront Plan ER. We have summarized the conclusions of our professional judgement given our uderstanding the Alternatives, the amounts of development that could occur under each through th year 2010, and our review of relevant planning documents and other analyses. The dicussion is qualitative.

GROWTH INDUCEMENT

Fom the perspective of the City as a whole, the growth inducement question is the extent to wich the Waterfront Plan EIR Alternatives represent an increase in economic activity in San Fncisco not otherwise expected to occur. The overall scenario for employment and population gwth in San Francisco between 1995 and 2010 is described by the *Projections '94* scenario ppared by the Association of Bay Area Governments (ABAG). The underlying land use asumptions for the Waterfront Plan Project Area incorporated in *Projections '94* are most cosistent with the land use assumptions that describe the No Project Alternative for the Wterfront Plan EIR.

Aernatives A and B illustrate scenarios in which the Waterfront Plan Project Area captures mre development and economic activity than expected in the No Project Alternative. For the mst part, Alternatives A and B represent scenarios that do not depend on any net additional ecnomic activity in the City during the time period analyzed in the EIR. Instead, more deelopment and economic activity in the Project Area mean less activity elsewhere in the City. Tere are three sectors, however, each representing a component of San Francisco's economic bae: trade, tourism and--more broadly--the visitor industry, for which growth inducement under the Waterfront Plan is a consideration. In the Waterfront Plan EIR Alternatives, these sectors are represented by the following land use categories: cargo shipping, cruise, and assembly/entertainment/recreation. Strictly speaking, growth inducement occurs when an action creates supply of land or building space that attracts demand not otherwise expected in a particular location. The Waterfront Plan could, therefore, have a particular impact on those uses that depend on the waterfront location. Of the three sectors for which growth inducement is a consideration, only the first two sectors are water-dependent activities. Assembly/entertainment/recreation uses, while not dependent on the waterfront location, are, however, uses that could take particular advantage of the unique features of that location and the extent to which San Francisco's waterfront is a special regional resource.

The conclusions about growth inducement impacts of the Waterfront Land Use Plan relate to these land uses, but they are not direct and obvious conclusions. The economic outcomes for cargo shipping, cruise activity, and assembly/entertainment/recreation uses in San Francisco are not necessarily dependent on the Waterfront Plan. Other market and regulatory factors are more important, particularly those affecting demand for San Francisco as either a cruise destination or a cargo shipping hub. Nevertheless, to the extent necessary investment in cruise or cargo shipping infrastructure is not possible without revenue-generating development elsewhere in the Project Area, then the future of cargo and cruise activity would be influenced by the potential waterfront development scenarios under the Waterfront Land Use Plan.

Economic Activity Associated with Cargo Shipping

Alternative B assumes higher levels of cargo shipping activity in San Francisco than is generally expected. San Francisco's share of west coast cargo demand would increase over time under the Alternative B scenario. The ABAG scenario assumes, following recent historical trends, that cargo shipping will decrease in importance over time as a part of San Francisco's economic base. This is reflected in the No Project Alternative and Alternative A scenarios for cargo shipping in the Project Area.

The additional economic activity associated with the higher level of cargo shipping is evident as more direct employment in that sector. The numbers are small relative to existing or overall projected employment in San Francisco. There would also be more sales and activity for cargo support operations, and they are shown remaining in San Francisco under Alternative B, in the Southern Waterfront subarea of the Project Area. In other alternatives, those activities are likely to continue to decline in San Francisco over time. There would also be more revenue and employment for both government and private sector entities involved in trade and cargo shipping businesses; the higher levels of cargo shipping in San Francisco would support some additional business activity in the downtown office sector.

he assumptions about the level of cargo shipping for each Alternative are somewhat dependent of the Waterfront Land Use Plan. The level of cargo shipping is more dependent on arket and other economic factors affecting international trade and on the competitive factors fluencing shippers' decisions to establish relationships with various West Coast and Bay Area orts. The Plan would make a difference in that the Port's ability to offer competitive facilities .g., the tunnel improvement project) and rates for maritime customers is dependent on the verall financial strength of the Port. Revenue from non-maritime use of some Port property ould contribute to providing and maintaining the infrastructure required for cargo-shipping uses.

conomic Activity Associated with the Cruise Terminal

two-berth cruise terminal could be accommodated at different waterfront locations under any the Alternatives. In the underlying economic scenario as reflected in the No Project lternative and Alternative A, the level of cruise activity in San Francisco is expected to remain latively constant over time (about 50 vessel calls per year), consistent with past trends and the nclusions of a recent (1990) cruise passenger terminal assessment completed by the Port of n Francisco.

e lack of growth reflects San Francisco's geographic isolation for West Coast cruises. ompared to Los Angeles/San Diego and Seattle/Vancouver, San Francisco is an extra 2-3 days siling time from popular Alaska and Mexico destinations. The geographic disadvantage is sverely compounded by the market constraints imposed by federal cabotage law (the U.S. ssenger Service Act). That law prohibits foreign-flag vessels--virtually all of the passenger cuise fleet--from carrying passengers one-way between U.S. ports. The requirement for round-tp itineraries and one foreign port-of-call means a substantially longer cruising time from San Fancisco that is not compatible with the growing demand for shorter trips and more exciting ineraries. Changes to the federal law would be required before San Francisco can begin to rlize its full potential as a cruise port-of-call. In addition, while "cruises to nowhere" are prmitted by cabotage laws (the round-trip itineraries include no ports-of-call: the attraction is th on-board activity), restrictions on gambling constrain potential expansion of this important sb-market.

Aternative B assumes a substantial increase in the number of cruise vessel calls in San Fancisco, to about 100 vessel calls per year in 2010. Under Alternative B, it is assumed that the fderal cabotage law is changed and that state law limiting gambling is changed. Those rgulatory changes would enable San Francisco to tap into the growing pleasure cruise market.

ore cruise activity in San Francisco, as illustrated in Alternative B, would represent a net adition of economic activity in San Francisco beyond that expected in the underlying economic scenario. In addition, the higher level of cruise activity, bringing more visitors to San Francisco, would support an associated amount of related economic activity in the retail, hotel, amusement/entertainment, recreation, transportation, and other passenger and cruise line service sectors. Most of that economic activity would be captured in San Francisco, in the form of higher revenues for businesses and the public sector and, potentially, higher levels of employment and more development activity. Some of the indirect and induced activity is reflected in the higher estimates of retail, hotel, and assembly/entertainment/recreation development and employment in the Waterfront Plan Project Area under Alternative B compare to the No Project Alternative and Alternative A.

The net additional economic activity associated with an expanded cruise terminal and increased passenger cruise activity, while it is illustrated by comparison of the Waterfront Plan EIR Alternatives, is not directly a consequence of the Waterfront Land Use Plan. It may not be proper to identify this as a growth inducing impact of the Plan. The increase in passenger cruise activity is more dependent on other regulatory changes and could happen without the Waterfron Land Use Plan. Nevertheless, San Francisco's (certainly the Port's) ability to capitalize on the new market potential could be enhanced by the development potential enabled by the Waterfron Land Use Plan and associated regulatory changes, i.e., the Port's ability to implement projects that attract people to the waterfront.

Economic Activity Associated with Assembly/Entertainment/Recreation Uses

San Francisco's waterfront is an asset of regional and international stature. As such, it has the potential to attract economic activities that would not locate elsewhere in San Francisco and would thus represent net additions to San Francisco, if not regional, economic activity. Alternative B represents a scenario in which that potential is realized in the form of assembly/entertainment/recreation uses.

Under Alternative B, it is assumed that successful regional attractions are developed in the Project Area. These attractions could be on the scale of the Exploratorium or the Pier 39 aquarium under construction. They could be the types of urban entertainment venues combinin retail, entertainment, sports, and high-tech attractions that are proposed or under development i New York City, Baltimore, San Diego, and other cities. There would be a symbiotic relationship between these successful attractions, the revitalized cruise terminal, hotel development, and visitor and specialty retail activity in the Project Area. An indirect economic impact of addition of successful regional attractions in the Project Area would be additional reta sales for San Francisco. As noted above in the cruise terminal discussion, some of that increase economic activity could be captured in the Project Area, as illustrated in Alternative B.

MPLICATIONS FOR NEARBY AREAS

he following discussion covers three topics broadly categorized as the implications of the aterfront Plan EIR Alternatives for land use elsewhere in the City. Those topics are:

- shifts of economic activity and expected demand for space to the waterfront from other locations in San Francisco,
- spillover implications influencing development patterns in nearby areas, and
- land use compatibility between development in the Project Area and expected land use and development in nearby areas.

he questions for the first topic are whether or not and to what extent the activity anticipated in e Waterfront Plan Project Area would represent a shift of economic activity from other cations in San Francisco. The corollary of the conclusion that much Project Area development d economic activity (particularly in the non-water-dependent sectors) would not represent a net dition to San Francisco is that development allowed and encouraged by the Waterfront Plan ould occur in the Project Area instead of somewhere else in the City. Given the nature of the es incorporated in the Waterfront Plan EIR Alternatives, the competitive locations are not nited to adjacent nearby areas.

ithout a net increase in demand, the increase in supply in the Project Area (supply of building ace and vacant land area for development) would result in more competition among Project ea sites and comparable locations in San Francisco. Depending on the land use category, oject Area development would reduce either the demand for existing space or the prospects for w development elsewhere in the City. If there were no corresponding decrease in the erwise expected supply elsewhere in the City (the cases of warehouse space or, perhaps, hotel oms, for example), attraction of some demand to the Project Area would mean lower ccupancy rates, higher vacancy rates, and lower rents for all space in that segment of the rket. Generally, however, the amounts of Project Area development are relatively small in the heme of the citywide real estate market; therefore, market effects such as these would be nited.

e second topic for land use impacts beyond the bounds of the Project Area is the spillover ect. The amount and type of development in the Project Area may influence the pace and type o growth and change in adjacent areas. Spillover effects would occur as the real estate market ponded to changed land use and activity patterns in the Project Area. The resultant changes in d use and development patterns, in the use of space, and the level of economic activity in rby areas are the spillover effects.

The third topic--land use compatibility--addresses the question of the relationship between Project Area land uses and land uses in nearby areas. The approach taken here is to consider potential Project Area land uses by subarea, as identified in the Alternatives, and expected future land uses in areas adjacent to the waterfront. The discussion identifies potential land use compatibility problems. Severe land use compatibility problems would mean that development either in the Project Area or in the nearby area might not occur as described in the EIR, assumin that land use compatibility issues would interfere with successful marketing and development o the locations in question.

The following points are organized according to the uses accommodated in the Waterfront Plan Project Area. For each use (or sector of economic activity), the discussion describes the likelihood that Project Area development would represent a shift of economic activity otherwise expected elsewhere in the City. The locations that might be affected (i.e., the locations that would compete with Project Area locations) and the extent of real estate market impacts on otherwise expected occupancy rates and rental rates, for example, are identified. The spillover effects of Waterfront Plan Project Area development on development patterns in nearby areas a described, and land use compatibility issues are highlighted.

Non-water-dependent uses

Retail

Local Retail. Local-serving retail space developed in the Waterfront Plan Project Area under a of the Alternatives would depend on a broader market area than the Project Area for customers. Residents and workers in nearby areas would provide the foundation of the market support, although waterfront residential development such as that represented in Alternative A would be an important component of market support.

The seawall lots in the Project Area offer large, mostly vacant parcels particularly suitable for this type of development. North of Market Street, there are not many other such sites outside t Project Area. Therefore, local-serving retail development in the Northeast Waterfront and Ferr Building subareas might result in some shift of local retail activity that would otherwise occur i existing space in nearby areas. The amounts of space shown in the Alternatives for these subareas are relatively small, consisting primarily of ground floor retail below new residential o office uses, so the impact on other retail development in the local market area would not be substantial. The larger amounts of local-serving retail development in the South Beach/China Basin subarea would be more likely to represent a shift of additional retail space from other potential locations in the Mission Bay Project Area or elsewhere South of Market Street, since those locations offer similarly attractive sites.

Because local retail shopping opportunities in the Project Area would depend on residents and workers in nearby areas for market support and would be developed as extensions of existing neighborhoods adjacent to the Project Area (i.e., Golden Gateway and South Beach), that type of Project Area development would blend relatively easily with the development patterns and expected future land use in nearby areas.

Regional Retail. Large-scale, discount, warehouse retail development in the Waterfront Plan Project Area would also represent a shift of such development from other potential locations in the City. The most likely alternative locations are: Mission Bay, South Bayshore, and South of Market.

The exception is the regional retail shown in the Northeast Waterfront under Alternative A. This could represent a public market developed in the Project Area. Organizers of the Saturday Ferry Plaza public market are working to establish a permanent location somewhere along the waterfront near the Ferry Building. Sites in and adjacent to the Project Area have been proposed. Earlier proponents had pushed for a Fisherman's Wharf location. Depending on site availability, market analysis, project economics, and design feasibility, a public market is a potential on-going use for this part of the city. Alternative A represents a scenario in which it could occur in he Northeast Waterfront subarea instead of somewhere else in the vicinity.

Under Alternative B, a large-scale warehouse retail development is shown in the Southern Waterfront subarea. Alternative B also assumes a full-blown cargo shipping scenario for San Francisco, concentrating such activity in the Southern Waterfront, including the necessary maritime support businesses that would have to relocate as Mission Bay developed. An intensive evel of cargo shipping activity and associated noise and traffic impacts may not be compatible with a successful retail development in the Southern Waterfront subarea. Assuming the site were ttractive to discount retailers for other reasons (land costs, availability of parking), retail evelopment and a lower level of cargo shipping activity might be able to co-exist.

Visitor/Specialty Retail. In addition to stores and shops, this category includes specialty estaurants, bars, nightclubs, and other night-time entertainment such as a complex of sports bars r other venues developed around a theme. For the city overall, growth in spending and sales is xpected for specialty retail, catering to day visitors and tourists, as well as to San Francisco esidents. The Waterfront Plan Alternatives represent different scenarios for the degree to which hat increased retail activity is captured by development in the Project Area. In Alternative B, ome amount of the visitor/specialty retail development in the Project Area would be considered et additional retail activity supported by the assembly/entertainment/recreation and/or cruise ctivity along the waterfront. Under Alternative B, San Francisco's waterfront is an important regional attraction, and the mix of land uses developed in the Project Area would generate additional retail demand.

For the most part, however, visitor-oriented and other specialty retail development in the Waterfront Plan Project Area would compete with other visitor-oriented retail locations in the City. The primary locations that would see less activity than otherwise assuming development occurred along the waterfront would be Fisherman's Wharf outside the Waterfront Plan Project Area (i.e., Ghirardelli Square and environs, the Cannery and environs, and the southern side of Jefferson Street), Union Square, and the expanding retail corridor extending across Market Stree to Yerba Buena Gardens.

In all alternatives, the prospects for future retail activity in the entire Fisherman's Wharf planning area would be improved over conditions today and over what would be expected in the future without such improvements. This is the result of the Hyde Street Harbor and Pier 45 improvements that consolidate the fishing industry in one location, thereby enhancing the environment for more pedestrian visitor-oriented development along Fish Alley and the rest of Jefferson Street. Waterfront Plan EIR Alternatives A and B, with more public access and urban design improvements to the Triangle Area (assuming adequate parking is retained in the vicinity and more attractions (particularly the Seafood Center envisioned for Pier 45), would further enhance the attractiveness of the Fisherman's Wharf area to both residents and visitors. The economic analysis completed for the most recent Fisherman's Wharf planning efforts in 1989 described how such an increase in retail activity in the Fisherman's Wharf planning area would be absorbed by some combination of additional retail space in the area and increased sales in existing space. The latter would be evidenced by improved performance at existing establishments or turnover whereby establishments with higher sales per square foot replaced those with lower sales per square foot.

Both the No Project Alternative and Alternative A show large amounts of specialty retail development in the Ferry Building Subarea. This amount of development would compete with specialty retail development elsewhere in the City; if it did not occur in the Ferry Building, it would occur as increased space or increased sales in existing space elsewhere in the City. The market orientation of the Ferry Building retail space would determine the degree to which that development would compete with Fisherman's Wharf or with downtown/Union Square/Yerba Buena retail districts.

Under Alternative B, the Project Area shows an even larger amount of visitor and specialty reta development in the Northeast Waterfront, Ferry Building, and South Beach/China Basin (north of the Channel) subareas. Development on this scale would mean less expansion than otherwis xpected in competitive retail districts such as Fisherman's Wharf (outside the Waterfront Plan roject Area) and Union Square/Yerba Buena Gardens.

he magnitude of that shift depends on the ability of regional attractions and passenger cruise xpansion (as envisioned in Alternative B) to increase the number of visitors to San Francisco, hereby increasing the overall size of the market, on the actual amount of retail development that vould occur in the Project Area, and on marketing and other factors. Existing and planned pecialty complexes either in Union Square or Fisherman's Wharf might benefit from more sales han otherwise expected if regional waterfront attractions and increased passenger cruise activity esulted in substantial expansion of the visitor and specialty retail market and retail development the Project Area were limited. The amount of visitor-oriented and other specialty retail space uccessfully developed in the Project Area would affect not only the amount of new retail evelopment outside of the Project Area, but also the extent to which sales per square foot crease in existing space, either through turnover or improved performance among existing stablishments.

ssembly/Entertainment/Recreation

ssembly/entertainment/recreation is a land use category covering an array of potential types of evelopment in the Waterfront Plan Project Area. Those types of development have in common e characteristic of attracting people to the waterfront. They vary in terms of the level of vestment involved and the intensity of activity that would be accommodated.

egional attractions such as outdoor (or indoor) amusement parks, high-tech tertainment/education venues on the scale of the Exploratorium, and smaller-scale high-tech tertainment arcades could be developed along the waterfront. Conference centers of various zes and spaces for exhibits and special events also could be accommodated.

uccessful regional attractions as illustrated in Alternative B would represent a net addition to onomic activity in San Francisco, as discussed above under the growth inducement bheading. Alternative locations in San Francisco for such attractions are limited and, in ldition, the unique features of the waterfront location may be particularly conducive to tracting that type of project, assuming a feasible development package.

onference centers and exhibit space along the waterfront would shift activity from existing nues and potential future expansions elsewhere in the city: Yerba Buena Gardens, Financial istrict, Showplace Square, Civic Center, and potentially further afield at such locations as Fort ason and the Presidio. This type of activity is expected to grow in San Francisco. The question where that growth occurs depends on the suitability of locations, including proximity to lodging and other services, and configuration of facilities offered. It may be more difficult to accommodate the requirements of larger meetings and conferences in the waterfront location.

There would be spillover impacts in nearby areas from the success of waterfront attractions tha would generate spin-off economic activity such as retail sales or increased hotel occupancy. Th impact would be moderated to the extent that spin-off activity was captured within the Project Area in associated retail or hotel development. There is a trade-off here. From one point of view, accommodating associated retail and related activity in the Project Area would relieve what might otherwise be experienced as real estate market pressures in adjacent areas (higher rents and potential displacement as increased sales generated demand for space from higher-ren paying tenants). On the other hand, to some, spillover economic activity would be an overdue potential benefit of successful attractions on the waterfront. Increased development activity an higher revenues per square foot could be a result of having San Francisco's waterfront come in its own as a regional attraction.

At the lower end of the spectrum in terms of intensity of activity, the recreation components of this diverse land use category (outdoor or indoor recreation facilities for tennis, basketball, jogging, or in-line skating, for example) would for the most part be means of increasing public access to and use of the waterfront. They are envisioned as potential interim uses for piers, in anticipation of longer-term higher-revenue generating uses, or as permanent active recreation facilities enabled by more intensive development elsewhere in the Project Area. This compone of the assembly/entertainment/recreation category would not pose any particular land use compatibility issues for nearby areas.

Wholesale Trade/Promotion Center

This type of development is represented in both Alternatives A and B. While the particular attraction and associations of a waterfront pier location for this type of activity might result in development more oriented towards international trade or San Francisco's Pacific Rim connections, there are a number of other areas in the city that could accommodate (and in fact have planned for) expansion of this type: concourse for display and sales, storage space, and associated marketing and promotional services. Alternative locations include Civic Center, Showplace Square, and other South of Market or North Potrero sites. Therefore, this type of development in the Waterfront Plan Project Area is not expected to add to the total amount of such activity in San Francisco, but rather, to shift development that might otherwise have happened elsewhere in the City.

Office / Research & Development

With the exception of Alternative B, the Waterfront Plan EIR Alternatives indicate a very small net change in office space in the Project Area. The difference under Alternative B is a larger amount of office space in the Ferry Building renovation project (paired with a smaller amount of Ferry Building retail space under that alternative) and the assumption that an office/research & development complex could be developed in the Southern Waterfront subarea, i.e., a relatively high-rent-paying use would be attracted to the historic buildings in the Pier 70 opportunity area.

Office/R&D development in the Southern Waterfront subarea would represent a shift of activity hat would otherwise be expected to locate elsewhere in San Francisco: in service-light ndustrial-research & development space in Mission Bay, in existing buildings South of Market, n new or existing buildings in the Inner Mission, in Executive Park, or potentially in office or R&D incubator space developed in Hunter's Point.

The relatively small amounts of office development expected in the Waterfront Plan Project Area would not be expected to make a difference in San Francisco's office market (either vacancy ates or rents). The largest amount of office/R&D development would occur under Alternative B showing a net change of about 230,000 square feet of space in the Project Area). The amount of pace represents less than four percent of the downtown and vicinity office space projected to be eeded to accommodate office employment growth through the year 2015 according to the *Economic and Growth Inducement Analysis* prepared by Mundie & Associates for the Terminal eparator Structure/Mid-Embarcadero Roadway Alternatives Analysis (January 1994). Although, the amount of office employment growth expected in San Francisco for the 2010 scenario for the Waterfront Plan EIR is less than the amount assumed for the Mundie analysis, otal Project Area office development would still be relatively small in the context of overall owntown demand. The unique features of waterfront office space, particularly space in the andmark Ferry Building, are likely to attract tenants even in a market with large amounts of upply.

Hotel

Hotel development in the Project Area is assumed to occur on seawall lots in the Fisherman's Wharf, Northeast Waterfront, and South Beach/China Basin (north of the Channel) subareas. In lternative B, about 1,100 hotel rooms are assumed to be developed in several smaller hotels in he Project Area. The No Project Alternative illustrates a scenario in which one small hotel is eveloped on a seawall lot in the Northeast Waterfront.

The smaller-scale hotel developments that would be accommodated in the Project Area would consistent with nearby land use and development patterns in the Project Area and inland adjac neighborhoods.

Some amount of the larger number of hotel rooms in Alternative B could represent a net additi of economic activity to San Francisco, consistent with and to some extent supported by the additional visitor activity assumed to be generated by regional assembly/entertainment attractions and increased cruise passenger traffic in San Francisco. These hotels would be capitalizing on a somewhat unique market niche, with the waterfront location being the prime distinguishing factor.
The number of hotel rooms in the Project Area under Alternative B (about 1,100 rooms) represent less than four percent of the total current hotel room inventory in San Francisco (abo 30,000 rooms). To the extent this amount of hotel development did not represent a net additic to San Francisco overnight visitor activity, it could be absorbed by relatively small declines in otherwise expected occupancies in other San Francisco hotels. The primary competition woul be Fisherman's Wharf hotels and smaller, higher-end Union Square and Financial District hote.

The Alternative B hotels in the Project Area would compete most directly with the proposed Mission Bay hotel. Under the Alternative B hotel scenario it would probably be more difficult establish a market for the Mission Bay hotel with several smaller hotels already developed alo the waterfront to the north. (Some analyses, e.g., the Mundie report referenced above, indicate that no more new hotels are required to meet expected demand through the forecast period covered in this EIR.) If the Mission Bay hotel were marketed more to business or convention travelers, then there would be more potential for accommodating both types of development in San Francisco's lodging future.

Residential

Residential development is shown on seawall lots in the Project Area in the No Project Alternative and Alternative A. The development would occur in the Northeast Waterfront subarea in the No Project Alternative and in the Northeast Waterfront and the South Beach/Ch a Basin subareas in Alternative A. Both situations represent extensions of the existing adjacent land use pattern (Golden Gateway and South Beach). The total number of units is small in the scheme of San Francisco's housing market. In both areas, Project Area residential developme would reinforce the existing neighborhood character and would add to demand for local-servi and other retail development.

There are no particular land use compatibility issues raised by residential development in thes locations in the Project Area.

Warehouse/Light Industry

The increase in warehouse/light industry uses shown in the No Project Alternative and Alternative A primarily represents interim use of pier sheds and other similar existing space in the Project Area. Relatively low intensity activities, such as storage uses, are assumed to be encouraged to generate lease revenue for the Port without requiring substantial upgrade costs to the buildings.

There is ample supply of this type of space elsewhere in San Francisco, in the South of Market, Showplace Square, Inner Mission, North Potrero, Lower Potrero and South Bayshore areas. Rent and accessibility are important location factors. For the Project Area to accommodate large amounts would mean shifts from these other locations in the City, and would result in lower rents, higher vacancy rates, and more underutilized space elsewhere.

Any light manufacturing uses developed in the Southern Waterfront subarea of the Project Area in new shed-type space would compete for tenants with locations in other industrial areas, including service/light industrial/R&D space in Mission Bay, or, elsewhere in the South of Market, Inner Mission, Potrero, or South Bayshore districts.

Expansion of these uses would occur in the Southern Waterfront subarea consistent with established and future land use and development patterns in nearby areas. Given the low intensity of activity and the assumption that this would be opportunistic use of space that was surplus to its maritime purpose, there would be no overall land use compatibility problems with either uses in adjacent areas or nearby Project Area uses.

Under Alternative A, some of the increase in light industrial space represents development of live-work projects in the Project Area. These too would mean shifts of this type of development potential from other locations in San Francisco such as South of Market, Inner Mission and the environs of Potrero Hill, and potentially in the future Hunter's Point development.

Under Alternative B, a decline in Project Area warehouse/light industry uses is indicated to illustrate the use of that space for more intensive, higher-revenue generating activity, such as amusement/entertainment and retail development from South Beach through the Northern Waterfront subarea. Also, in the Southern Waterfront subarea, the full utilization of those parcels for cargo shipping and related maritime support precludes other non-water-dependent uses, i.e., those warehouse and light industrial uses shown, particularly in Alternative A, to illustrate a scenario in which cargo shipping, ship repair, and maritime support activity do not require so much of the Southern Waterfront land otherwise reserved for water-dependent land uses.

General Industry

General industry use in the Waterfront Plan Project Area primarily consists of open air storage of building materials, equipment, vehicles, and soils for remediation. These uses have been cultivated on Port property in the absence of more water-dependent cargo shipping activity. The No Project Alternative represents continuation of the status quo over the longer term, in the absence of demand for land from other uses. Alternative B shows decline of general industry uses in the Project Area as that land area is assumed to be needed for other uses, primarily more active cargo shipping.

Water-dependent uses

Fishing Industry

The scenario for the fishing industry is the same for all Alternatives: the fishing industry activity now located in Fisherman's Wharf, and some other locations in South Beach and the Southern Waterfront subareas, would consolidate at Fisherman's Wharf around the Hyde Street Harbor/Pier 45 project.

Cruise Terminal

There would be no change in either the level or location of cruise activity in San Francisco under the No Project Alternative.

Alternative A illustrates relocation of the cruise terminal to the South Beach/China Basin subarea (north of the channel). The cruise terminal would be compatible with land use trends and development patterns in that location. Alternative A does not assume increases in the number of vessel calls in San Francisco.

Under Alternative B, the cruise terminal would remain in the Northeast Waterfront and the level of activity would be substantially higher as San Francisco is assumed to capture an increasing share of the growing passenger cruise market. A new and expanded cruise terminal would be compatible with the higher intensity node of activity envisioned for the Northeast Waterfront subarea as illustrated in Alternative B. Embarking and disembarking passengers as well as others visiting the cruise terminal would be an important component of the market support for the regional attractions that could be accommodated elsewhere in that subarea and elsewhere along the waterfront.

here would be spillover economic activity for retail, entertainment, and hotel sectors. Under e Project Area scenario illustrated by Alternative B, most of that spillover would remain in the roject Area. As described earlier in this section, there are tradeoffs between capturing ubstantial retail activity in the Project Area and limiting Project Area development so there ould be more spillover impacts in nearby areas.

argo Shipping/Ship Repair/Maritime Support

he alternatives differ in the degree of utilization assumed for existing cargo shipping and ship pair facilities. In the No Project Alternative and Alternative A, the designated land area is not lly utilized and interim uses or low intensity open air storage uses are assumed to occupy some f the space. In Alternative B, a full-blown cargo shipping scenario is realized in San Francisco. argo shipping activities are consolidated primarily in the Southern Waterfront and are assumed require most of the land dedicated to those purposes. This includes cargo support uses that ould be displaced from the Mission Bay Project Area. From a land use perspective, there ould not be a problem accommodating the Alternative B cargo shipping scenario in the uthern Waterfront subarea. There is not likely to be strong demand for that land from higher- venue generating uses and, unless transportation impacts are identified, the cargo shipping use ould be compatible with the general industrial character of the surrounding districts. As entioned above, within the Southern Waterfront subarea, there may be problems commodating a full-blown cargo shipping scenario with large scale warehouse retail evelopment in the Project Area, as indicated in Alternative B.

ubstantial cargo shipping and ship repair is also shown in the China Basin area under lternative B. As identified in the Mission Bay EIR, such development would not be compatible ith the residential and open space uses proposed for the adjacent parcels in the Mission Bay oject Area east of Third Street. Industrial noise and lights, truck traffic, and nighttime erations would not make a good setting for marketing nearby residential development. A rlatively low level of cargo shipping and/or ship repair activity, such as that existing through the erly 1990s, could probably continue for some time into the future without substantially affecting te market for residential development in the area. Once a residential community were etablished at Mission Bay, however, it would be increasingly difficult for cargo shipping and sip repair activity to expand operations nearby.

unter's Point could be a potential future location for ship repair expansion in San Francisco, rieving any pressure for expansion in the China Basin subarea that would not be easily acomplished with development of Mission Bay. Hunter's Point could accommodate operations crrently located in the China Basin and Southern Waterfront, in addition to other operations. e assumption of the Hunters Point real estate economics and market analysis, consistent with the underlying economic scenario for this EIR, is that cargo shipping and ship repair activity are not likely to expand in San Francisco in the future, in spite of Seaport Plan port-priority use designations.

Ferry/Excursion/Water Recreation/Historic Ships

These uses would be developed to support other activity along the waterfront. They would add to the attractions of the waterfront. Ferry and excursion boats and water taxis would increase access to the waterfront. There are no apparent land use impacts in terms of development patterns and land use compatibility.

APPENDIX K: ACRONYMS

ABAG	Association of Bay Area Governments
AC Transit	The Alameda-Contra Costa Transit District
APCDs	Air Pollution Control Districts
AQMDs	Air Quality Management Districts
ARB	The California Air Resources Board
AWSS	Auxiliary Water Supply System
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
BART	The Bay Area Rapid Transit District
BCDC	San Francisco Bay Conservation and Development Commission
BMPs	Best Management Practices
Btu	British Thermal Units
CalTrans	California Department of Transportation
CAP	Clean Air Plan
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CO	Carbon Monoxide
COE	U.S. Army Corps of Engineers
CWP	Central Waterfront Plan
dB	decibels
DPH	Department of Public Health
DMG	California Division of Mines and Geology
EPA	U.S. Environmental Protection Agency
FHWA	Federal Highway Administration
FWS	U.S. Fish and Wildlife Service
FY	Fiscal Year
gpm	gallons per minute
GWh	Watt-hours
HCM	Highway Capacity Manual

HOV	high occupancy vehicle
JPB	The Peninsula Corridor Joint Powers Board
kWh	kilowatt-hours
LOS	Level of service
LTMS	Long-Term Management Strategy
mgd	million gallons per day
MHW	mean high water line
MIS	Metropolitan Transportation Investment Study
MSL	mean sea level
MTC	Metropolitan Transportation Commission
MUNI	The San Francisco Municipal Railway (Muni)
MW	Megawatts
MWSS	Municipal Water Supply System
NAAQS	National Ambient Air Quality Standards
NO_2	Nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NMFS	National Marine Fisheries Service
NWP	Northeastern Waterfront Plan
NWSUD#1	Northern Waterfront Special Use District No. 1
O_3	Ozone
Pb	Lead
PCBs	polychlorinated biphenyls
PG&E	Pacific Gas and Electric Company
PM_{10}	Inhalable particulate matter
ppm	parts per million
RWQCB	San Francisco Bay Regional Water Quality Control Board
SamTrans	The San Mateo County Transit District
SFPD	San Francisco Police Department
SFRA	San Francisco Redevelopment Agency
SHPO	State Historic Preservation Officer
SLC	State Lands Commission
SO_2	Sulfur dioxide
SP	Southern Pacific Transportation Company
SUD	Special Use District

SWL	Seawall Lot
SWPPPs	Storm Water Pollution Prevention Plans
TCA	Trichloroethane
TCE	Trichloroethylene
TCM	Transportation Control Measure
UBC	Uniform Building Code
UCBC	Uniform Code for Building Conservation
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compounds
WLUP	Waterfront Land Use Plan